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VOL. III.

ROSES FOR MARKET

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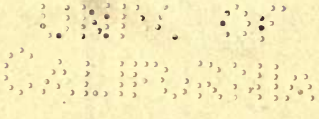

Weeping Standard

MARKET NURSERY WORK

A SERIES OF SIX BOOKS
ON THE CULTIVATION
OF CROPS FOR MARKET

BY

F. J. FLETCHER, F.R.H.S.

VOLUME III

ROSES FOR MARKET

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MARKET NURSERY WORK

VOL. III

ROSES FOR MARKET

CHAPTER I

RETROSPECTIVE

THERE is a glamour about the rose which, even to the oldest rosarian, makes a strong appeal, and might perhaps tell against that purely commercial spirit in which we desire to deal with our subject. Seeing, however, that it is now some twenty years since we used to gird up our loins and join in the fray at the Crystal Palace and elsewhere, mementoes of which we still value, we are able to detach ourselves entirely from the sentimental and concentrate on the practical.

Still, the old love for the rose burns in us as strong as ever, and this is all to the good, for it makes our present task a labour of love, and will enable us to transfuse some of the " rose " spirit into these pages.

We are not expected in this place to offer you a study of the " rose," its origin, history, traditions, division and subdivisions, for interesting as such a study may be, it would have no direct bearing on the commercial side, and those who care to study it are amply provided for in those popular standard works by Dean Hole, Foster Melliar, and others. We are ourselves professional—that is, trade growers—whose business it is to make rose growing profitable, and it is for those who are similarly interested, especially those who are less experienced, that we write.

There is no reason why this commercial side of rose growing should not be as attractive and create as much enthusiasm as the so-called amateur growing of the more leisured and non-commercial devotees, for who shall dare to assert that the Pauls, the Cants, the

Priors, the Mounts and Hicks's do not find as much joy and zest in the pursuit as the Pembertons, the Hollands, and other famous experts ? Such being the case, we might assuredly anticipate a pleasant journey together.

In the year 1874, when we first began to take an intelligent interest in the rose, the following dozen varieties (written from memory) were in the first flight, and we record them merely to show how far we have travelled since then. They were : Paul Neyron, John Hopper, Captain Christy, La France, Charles Lefebvre, Prince C. de Rohan, Duke of Edinburgh, M. Niel, Devoniensis, Boule de Neige, Countess of Oxford, General Jacqueminot. We rather wonder what rosarians would think of such a dozen if placed on the exhibition boards alongside the best dozen of to-day ! Yet we used to hang over these with an affection and admiration which even the grand creations of recent years cannot surpass !

There can be no doubt whatever that the vast improvements effected—the choicer, the more æsthetic forms, the delightful and more delicate colours, combined with a more continuous season of flowering—have done very much toward popularising the rose, and is more responsible than anything else for the great commerce now done in it, and created something of a boom of which we should take full advantage. The fact, too, that it is our "Rose of England," embodying the national ideal, must ever maintain its popularity, or at least as long as the ideal lives—and may that be for ever !

If we made this jump, from 1874 to 1921, taking no note of all the varieties which come between, we should be guilty of ingratitude, for without them the exquisite varieties we now bend the knee to would have been impossible. They were, as a whole, necessary to the evolution of the rose. Many hundreds of varieties, some of outstanding merit, which are still admired, but by far the greater portion of which have been consigned to oblivion, have played their part, each marking a step in the path of progress, and we should be churlish indeed if we did not give them this passing recognition. The number of them must have run into thousands, and some among them might well be called remarkable, though their place knows them no more. Instance, for example, Bennett's masterpiece, Her Majesty—massive, perfect in form, pleasing in colour,

carrying everything before it for a time. Where is it now? Take again a rose of totally different type, Comtesse de Nadaillac, a tremendous winner of "best rose" medals; it has disappeared. Another, Souvenir d'Elise Vardon. What has become of it? Yet these three, taken at random from scores, were in everything perfect in bloom, and would, if done well, hold their own to-day, as does that other far older favourite, Maréchal Niel. Their defects were not in the bloom, but in some other characteristics of the plant.

There is one other we must here refer to—the oldest and most typical of all, a variety which still lives and will never die out, though it is altogether outclassed. If any rose may be said to be so, it is distinctly and emphatically plebeian, and finds itself most at home adorning the walls of the humble cottage in every English village. No rose is more beloved, nor has fonder associations, and no rose lives more in the minds and memories of countless men and women, who, having left their native home, are scattered over very portion of the wide world. I refer to the old Gloire de Dijon.

CHAPTER II

SOME BUSINESS CONSIDERATIONS

Our subject is larger and wider than, at first glance, it may seem to be ; the commerce in it being large and important. Hundreds, perhaps thousands, of acres of our best land are given over to its cultivation, and scores of acres more, covered with glass, are devoted to the production of its fragrant blooms. A very large number of men and boys are engaged, the whole of their time, in planting, budding, tying, cultivating, lifting, and packing, and their work makes them among the best of their class. The amount of capital involved has not been computed, for rose growing is not one of those " industries " the statistics of which can readily be tabulated, and indeed none but specialists not otherwise involved in general nursery work could supply accurate figures. Yet with hundreds of acres, with so much glass, with thousands of willing and devoted workers, we have never yet been wholly able to meet the demand and, to our own chagrin, we have to import many thousands every year from Overseas. This is a thing we should not cavil at, as so many do, because the remedy is altogether in our own hands, for it amounts to this : that our supply is not equal to the demand. This more than suggests that we should produce more, and as there are no roses in the world equal to those grown in the United Kingdom, we see every reason why we should do so. But while we find no fault with the importation of roses from the Continent in the legitimate way of business, we do most strongly deprecate the dumping of surplus Continental stuff to auctioneers, who sell thousands of roses at prices which the nurseryman often has to pay for his stocks for budding. More than this protest would be out of place here. It is up to us to produce more ; to guarantee our stock as true to name and character ; to be robust and healthy ; reasonable in price ; and by these methods to hold our own against all competitors.

To do this, sound business principles and strict business methods must govern the cost of production, and it is very desirable that our staff of workers should be taken into our confidence, and be taught

to realise this. It is as true of the nursery as of the factory that "Time is Money," and if we work eight hours a day there should be eight hours' work done daily, or the output will suffer and the cost of production be increased.

The prices at which we purchase or raise our briers, manetti or other stocks, should be closely examined, for in some districts it is cheaper to purchase than to raise, while in others every hedgerow will provide material. We cannot really afford to pay more than about 30s. per 1000 for our dwarf stocks, as this closely approximates the cost of raising our own, while standards and half-standards are worth 8s. to 12s. per 100. These prices are much below those we have had to pay recently, but war prices must not be taken to represent actual and average values.

Supervision as to costs must apply at every stage. We do not care to advocate anything in the nature of piecework in the nursery, for we do not believe in it, and certainly not as applied to the planting of rose stocks which needs to be carefully done; but we do insist that even this should be done expeditiously. If we can plant 1000 stocks for, say, 10s., they certainly ought not to cost 15s. We do not mention these particular sums as actual cost, but merely by way of illustration. Our responsible men have as little love toward imported roses as we have ourselves, and being, generally speaking, intelligent and conscientious men, will readily enlist to help us fight this traffic, submitting to any necessary discipline in "keeping their end up." We fear, however, as the result of many years' actual experience, first as "hands," afterwards as nurserymen, that there is not a sufficiently strong bond of union between masters and men; that there is a lack of frank and full confidence on the one part, and failure to appreciate the "community of interests" on the other. We have noticed that where there is familiarity and confidence on both sides, business operations proceed with greater verve, and this is what we want, for in this fight to uphold our position we must draw more closely together and work for each other.

But business methods do not stop at the planting of the stocks; they apply equally at every stage of the cultivation—the cleaning, the suckering, the budding, the growing, the lifting and despatching. Each must be set about as though the operator "meant business."

Everyone engaged ought to bear in mind that the plants turned out as the result of this detailed work do not average more than 1s. each in value in ordinary times, so that if the nurseryman is to carry on his business the cost of production must be considerably below that sum. So narrow must that margin be that it is only by growing considerable quantities rose growing can be made to pay, which fully proves that our remarks concerning business methods are justified and necessary.

We feel that even the boys who do the weeding and suckering and tying ought to learn something of this and what it all means ; it might give them a sense of responsibility which, more than anything else, engenders self-respect. A self-respecting boy is reliable, and if he has imbibed the idea that he is of some importance, that with every bud he ties in he is doing something of national importance, that he is himself a necessary cog fitting into some important place in the great commercial machinery, he will never again show careless indifference, but will give of his best.

To many there may be something new in this statement, the point of view being far removed from what used to obtain ; but it is the considered opinion of those who, standing on the verge of old age, can dispassionately and almost disinterestedly look back over a long past with its many successes and its due meed of failures, noting with gratification the many factors contributing to the one, and placing the finger on the weak spots which have contributed to the other.

CHAPTER III

PROPAGATION BY CUTTINGS

THE rose is propagated in three different ways: (1) by cuttings; (2) by budding; (3) by grafting, and if we proceed to consider these in their proper order we may avoid going twice over the same ground. There are two different methods by which plants are raised from cuttings, one is by making cuttings from young, firm wood taken from indoor plants in May and early June, inserting them in pots and striking them in heat; the other is by making cuttings from well-matured, ripe wood in October and striking them in the open. As it will be necessary to refer to the former when dealing with roses in pots it might be convenient if we defer our consideration of that method until then. We will deal now with the more generally practised method of autumn cuttings in the open.

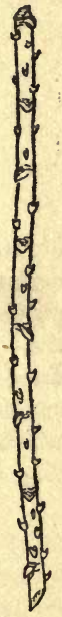

FIG. 1
A Rose Cutting

Some varieties lend themselves much more readily to propagation by cuttings than do others, being hardier and of a more robust and woody growth. Most of the hybrid perpetuals are what we would call good subjects, but only a few of the more tender tea roses lend themselves to it. The hybrid teas come midway between the two, such strong growers as Caroline Testout and Killarney and similar varieties responding well. Most of the so-called pillar roses root freely, the rambling Wichuraianas particularly so, and we find this is the best and most satisfactory way of growing them. To bud them is to waste stocks.

The cuttings should be made in the early autumn—October—when the wood is hard and ripe, not by severely mauling the plants, but by removing from them some of the hard growths they can spare without detriment to themselves. These are cut into lengths of from 7 to 9 inches, the bottom cut being level just below an eye, and the top cut being slightly aslant and immediately above an eye (see Fig. 1). Soft, pithy wood is

no manner of use as cuttings; indeed, wherever possible the cutting would benefit if a heel of older wood was attached to it. If the variety happens to be one of those whose thorns are very plentiful and prominent, like those of Mde. E. Herriot, they should be removed with a sharp knife so that the cutting may be the better and more closely embedded in the soil. It is very essential that the contact be close and very firm.

The cutting bed in which they are to be inserted should be made up of open, sandy soil, finely pulverised and well dug. We never

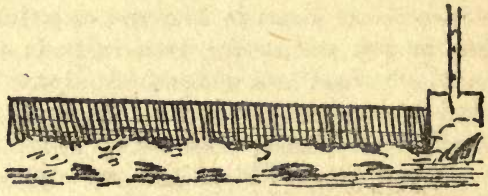

FIG. 2.—Rose Cuttings. Making the Trench

dig less than 1 foot in depth, for we have found that this depth is necessary to make a root-encouraging bed, and to carry the young plants through the viscissitudes of their first season, especially if there are droughts. Having dug a wide spit across the bed and firmed the soil, we level the surface with the back of the spade and cut a straight trench with a slightly sloping back wall, against which the cuttings may rest (see Fig. 2). If the cuttings are 9 inches long we cut the trench 8½ inches deep; if shorter, then corre-

FIG. 3.—Rose Cuttings in Position

spondingly shallower. Cuttings should not be of greatly varying lengths, because every one must rest solidly on the firm bottom of the trench, and if some were short and others were long the short ones must be hopelessly buried, or the longer ones be too much out of the ground. Therefore it is well to grade the lengths, and

so cut the trench that in no case should more than half an inch of wood be above the surface of the bed (see Fig. 3). At a distance apart of 1 inch the cuttings are stood along the trench resting against the back wall, every portion of the cutting being in direct contact with solidly pressed soil. When the row is complete, turn 3 inches of loose soil on to the cuttings all along the row, taking care not to displace any of them (see Fig. 4). Tread this well in (see Fig. 4A), then turn over a further 3 inches and tread again, the final 3 inches to make the level must also be trodden (see Fig. 4B). When a sufficient width has been dug to admit another row, level the top with the back of the spade, shift your line and carry on row after row. This is best done between mid-October and mid-November,

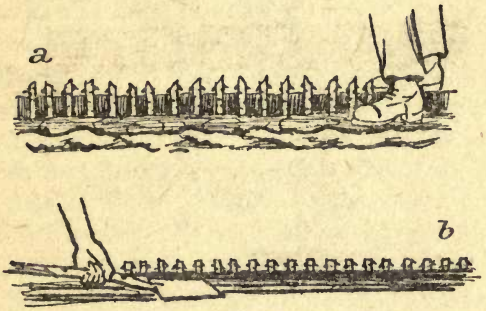

FIG. 4.—A. Treading in. B. Filling in Trench

and before the period of sharp frosts, for by doing it thus early the returning sap locked up in each cutting will form a callus ready for the emission of roots.

When severe frost does come it has the effect of loosening and heaving the soil in the process of thawing, and this often loosens the cuttings, which you can find out by testing. Therefore, as soon as the thaw is over and the soil fairly dry, it is always a safe plan to tread them in again—a process which should be repeated as often as sharp frost and thaw renders it advisable. The very life of the cuttings depends upon their close grip with the soil, so that it pays to follow this firming-up until the roots are made and strong enough to maintain their own grip. The only other attention required throughout the first growing season is that of keeping down the weeds and frequent hoeing to keep the surface of the soil

open. When October comes round again the whole bed should be lifted, the roots shortened, also the tops (see Fig. 5) and planted into nursery quarters at 10 inches apart in the rows and 1 foot from row to row, not planting deeply, but making them sufficiently firm to stand against the gales.

We are not disposed to claim as much for " own-root " roses as some of the enthusiasts do, except for the few varieties and classes

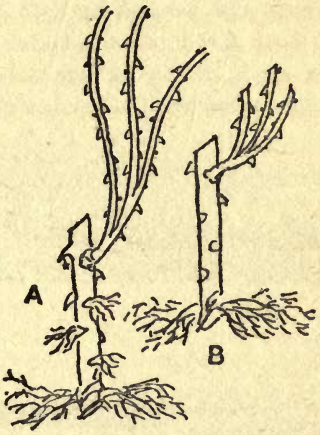

FIG. 5.—Rooted Cuttings. A. As Lifted. B. Trimmed for Planting

already alluded to. Their merits are mostly negative, chief among which is the fact that they throw up no unwanted suckers, and that they have not the objectionable habit of going off suddenly because of stock or root troubles. They do not, as a rule, furnish blooms up to exhibition class, and though we strongly recommend this as an additional method of propagating suitable varieties, we are obliged to point out that 95 per cent of the roses grown in the trade are budded stuff. As a rule, the " own-root " rose is not a vigorous grower, and the ordinary buyer of roses, wisely or unwisely, expects strong, vigorous plants.

CHAPTER IV

STOCKS

THE art of budding is both simple and interesting. It is neither difficult nor involved, and anyone who cares to practise can soon become adept and successful. Most authorities describe it as an autumn operation, though we look upon it principally as a task for the summer, beginning early in July. Apart from the fact that the large rose grower is obliged to make an early start to enable him to get through many thousands, we hold that it is better to bud in July rather than September, for if it happens to be a dry August there is but little flow of sap in the following month. We have, owing to numbers, been engaged in budding from early July till close on Michaelmas, and more than once stress of weather has made us late; but, other things being equal, we are prepared to stand by July as the best month for the purpose.

But, to take first things first, we must turn to the subject of stocks, because budding naturally assumes the existence of them. We can remember the time when 90 out of every 100 budded dwarf roses were worked on the manetti stock, that being before brier cuttings and seedlings had been generally proved. Then at the end of the seventies, there came along the Italian stock, *de la Grifferaie*, which for a few seasons was adopted as a stock on which to work the Gloire de Dijon section and the W. A. Richardson. Later, much later, rosa laxa was tentatively suggested as a suitable stock, and on trial it confirmed itself as being eminently suited to certain roses, and there it remains. But all this time the principal Continental growers were using rosa rugosa, which we treated with contumely and would not touch, until the day of the Weeping Standard rose dawned and we found out that the dog rose would not give the requisite length of stem, but that the rugosa would. So, being practical men, we admitted this stock and soon found out that our rigid bias against it was sheer prejudice and nothing more. It is now being freely used, more especially because of the shortage in briers, both for dwarfs and standards.

Propagation of Stocks

Though carried out on a much larger scale, the propagation of stocks from cuttings is identical with that laid down for roses, with this difference: that whereas the eyes are all left in the rose cutting, all but the two top ones are removed from the stock cutting. This is done to discourage and prevent as far as possible the growth of suckers, but it appears never to be entirely successful, for however carefully the eyes have been eliminated we never yet saw a batch of stocks suckerless. Still, it is a precaution we are bound to take, for it is the only means of checking them that we know of. The cuttings are made from practically all the wood that can be obtained, except the unripened ends, though we think that perhaps we do not sufficiently discriminate and that the percentage of rooted cuttings would be higher if we more carefully selected our wood. That which is ripe and hard not only strikes best, but makes the best stocks. Cuttings are obtained in abundance from the head-growths of budded stocks, and this can be largely supplemented by going to the heath and hedgerows for plump, red growths of the wild dog rose. But do not be tempted to cut and carry home those long, soft, sappy growths thrown up late in the season—they are worse than useless.

The making of thousands of these is a sound investment, for it finds profitable occupation for the hands when the weather precludes all possibility of land work, and if a much larger number is produced than can be used the market is always hungering for them by the thousand. Our own practice has always been to strike 3000 for every 1000 we want to grow for ourselves, and we have worked out the fact that by so doing we virtually had our own stocks for nothing.

Cuttings are made 9 inches in length. They would root just as freely, perhaps more so, if they were only 6 inches long, but that economy would be more than wiped out when the time came for budding, for the 9-inch length is a good stem for the stock and leaves room for the budder to get at it without hindrance, thus greatly accelerating his pace. The 6-inch stem with a bushy head, and 1 inch at least below ground, presents greater difficulties to rapid budding, and this is appreciable where, say, one hundred

thousand have to be handled. So let the length be 9 inches—no more, no less.

As much care should be taken in the making of these cuttings as though they were roses, for they are of the same character and habits, and need just as much encouragement. If secateurs are used, as they usually are, then they should be kept well sharpened, for, though we dislike this tool, we are bound to admit its economic value. Whenever we use secateurs, it is not of the French type, but the rather more cumbrous make with a sliding blade which can be got used to after practice. Anything of the nature of a pinch must bruise the bark of the cutting, and with ordinary secateurs this is often unavoidable. The cuttings being cut to length are passed out of hand and a junior takes them up to "eye" them—that is, to remove the eyes. Leaving the two top ones to grow, he, with a sharp knife, slices off the eyes and probably any very prominent thorns. He knows that every eye has three potential buds—that is, the main central bud and a subsidiary one on either side—so that if the cut is not sufficient to take off all three the one remaining is certain to grow. In slicing them off, the cut must not penetrate beyond the bark, or the wound will set up a weakness which may possibly develop at some later stage, and during its life it meets with quite enough difficulties without having to bear needless wounds.

Most nurseries have "cutting" grounds—that is, a plot of ground, small or large, according to requirements, set aside for cuttings of various sorts—and this is a good custom, because it can be got into and kept in good condition; new soil of the correct quality can be added and it can enjoy the advantages of a sheltering, evergreen hedge if necessary. But suppose there is no such plot set apart, then the next best thing is to select your spot in some sheltered position, and if the soil is too heavy modify it with sand, road sweepings, or some other open material, until it becomes workable, friable and "kind." As with the rose, so with the rose stock, the cuttings must be firmly set in firm soil; and the same treading after frosts must be given to these, as indeed to most cuttings in the open ground. The summer cultivating and cleaning must also be carried out throughout the season, and those who best carry this out are paid the best. The results are

very apparent when "lifting time" comes in November, and the plenitude or paucity of roots reveals whether the culture has been thorough or only moderate.

It is possible to put cuttings in, in more open order, on ridges, give them quite intensive culture and when rooted level down the ridges and bud straight away, thus saving a year. But this is not to be thought of in mass production, as involving too much space and too much labour; it can only be indulged in by amateurs whose requirements are very limited, but whose time is not so limited. Still, it may be done by any who have a use for it, and is, as a rule, successful.

The process which we have tried our best to describe and make clear applies to all the varieties of stocks we have named, viz. the brier, manetti, *de la Grifferaie*, laxa and rugosa. Given intelligent treatment, there is no reason why 75 to 80 per cent of successes may not be looked for, especially if the season prove at all favourable, but not if any quantity of immature unripe wood is used. The thickness of the wood is of secondary moment, for though fairly stout wood is naturally chosen, the thinner wood, if solid and ripe, will root equally well, and their first season's growth will swell them to the size required for budding. The budder will always take care to use up his small buds in the thinner stocks and his large ones in those that are stouter. The building up of the stock is the first important step in the life of the rose, for it cannot impart a health and vigour which it does not itself possess.

Seedling Briers

The seedling brier as a stock has much to recommend it. Its principal and perhaps only defect is that it is more difficult to get at to bud because it has practically no stem. The ripe, scarlet heps are gathered from the hedgerows and commons in the autumn and put in a heap to rot, being mixed with an equal bulk of sand and frequently turned and bruised. In the spring, when all the flesh of the heps has decomposed, the residue is scattered thinly along drills about 2 inches in depth and covered in like any other seed. It will germinate slowly and indeed grow but slowly afterward, so that the seedlings usually stand two years before being trans-

planted. Assiduous attention must be used to keep them on the move, and it will be found that if the ground was not really well dug and prepared, mildew will play havoc with the growth. The more thoroughly the soil was prepared the better will be the braird and the quicker and stronger the growth. At the end of the second year the whole are lifted, a fair proportion being set aside for planting ready for budding, the remainder planted back thickly for another year's growth.

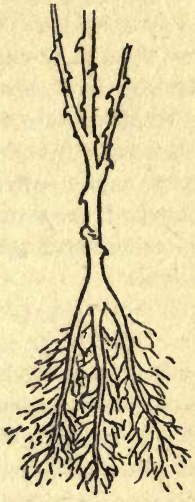

FIG. 6.—Seedling Brier

The great recommendation of the seedling brier is its magnificent root system (see Fig. 6), a far more complete and potential system than can be found with cuttings. Where it can be planted in a good, deep soil the full benefit of this becomes apparent, but it loses these advantages on shallow soils where the cutting is at least its equal. The finest roses it is possible to grow are on this particular stock, and we imagine that the growers who have best learnt to appreciate it are those whose success depends very much on what they can achieve at the exhibition tables.

STANDARDS

Stocks for standards were, until quite recently, obtained exclusively from the woods and hedgerows, and we suppose this will long remain as the English rose stock for standards. Usually they are purchased from woodmen or others who obtain permission from the farmers to grub them up, but it is a great pity that these procurers cannot be got to understand the value of a little fibrous root to each brier, for usually they are brought in absolutely destitute of any vestige of it. It speaks volumes for the hardiness of this native stock that so many survive what is a very cruel ordeal. At the same time we think that if nurserymen would insist upon their being properly grubbed, and rejected all below a certain standard, there would soon be an all-round improvement. When

brought to the nursery, the briers should not be allowed to lie about awaiting a favourable opportunity for trimming, but either trimmed straight away and heeled in, or heeled in until the trimming could be attended to. Trimming consists of cutting away any superfluous undergound growth and cutting the stem to an approved length determined by the stoutness and character of the stock. The only other stock we use for standards is rosa rugosa, and this is raised from cuttings and encouraged to run up to a height of 6 or 7 feet. It is easily rooted, it grows quickly, and now that Weeping Standard roses of the Wichuriana type are in demand, there is no other stock upon which we can depend to attain the requisite height.

Planting Stocks

Stocks should be planted in lightly manured but heavily tilled ground. We emphasise the "heavily tilled," by which we mean that the digging must be deep and thorough. They should only be planted in favourable weather when the soil is workable, not clinging, for only then can best conditions be secured. From their very commencement we want these stocks to do well; not to grow fat and to be so rich in sap as to smother the bud later on, but just to promote a healthy, robust growth, holding something in reserve. That is why we object to heavy manuring, for with too much manure the stock becomes almost unmanageable and grows a thicker bark than we care for—at least, that is our experience, and as the hand which is writing this has budded considerably more than half a million stocks we think the experience is worth something.

Do not plant stocks too deeply. The roots should be near to the surface, but deep enough to provide anchorage against strong winds and to withstand drought. The bud has to be inserted as near to the root as is convenient to get it, so if the roots are 3 inches below the surface it means that 1½ inches of soil have to be scraped away to allow the bud to be inserted sufficiently low down. This is all very well, but it makes extra labour and is dangerous in another way, for we have seen these cavities filled up with solid ice in the winter and the bud frozen in—to its own undoing. We therefore prefer to plant as shallow as is consistent with safety and to insert

our buds not below the surface level, but near enough to the roots for all practical purposes.

Dwarf stocks, of whichever kind, are planted about 9 or 10 inches apart in the rows, with 1 foot from row to row. Standards should be about the same distance apart in the rows, but for the purpose of securing sufficient space to get among them for budding, they may be in double rows at 1 foot apart, but with 2 feet separating them from the next double row. It is only the man who does the budding and the boys who tie them in that can appreciate this extra space on either side; yet we have many times dealt with stocks which even at that distance have been so dense in growth that a way has had to be hacked into them!

The planting of rose stocks should be finished in February if weather permits to allow the roots to become active before top growth begins. Autumn planting would be still better, for the longer the period during which they can do their work the better condition will they be in at budding time; which is only equivalent to saying that they can be budded with greater success.

In the case of standards, all the young shoots, excepting two or three, must be rubbed off as fast as they appear. A good, healthy brier will sometimes send out a dozen growths, but as it is not a paying proposition to put more than two or three buds in to one stock, the whole strength of the brier should be concentrated in the selected shoots. This and the suckering of the dwarfs must be attended to throughout the early summer, and even after the budding.

CHAPTER V

BUDDING

And now the all-important time arrives—the month of July. The rose shows are just over and the skilled labour concentrated on budding. The plants from which the buds are taken will be sufficiently advanced, for having produced their first crop of bloom there will be an abundance of solid, well-matured wood, with plump buds, which must be taken before they become too advanced. Sappy growth, with undeveloped buds, is unfit, and hard wood with buds bursting into growth is also unfit. Experience alone can teach the budder the exact stage when a bud has the best chance, but perhaps we may offer a description of what constitutes fitness.

First, then, the wood must be firm, the leaf fully grown, the bud (eye) plump and developed. Usually, the wood from which a fully expanded bloom has been cut answers these conditions, and this will furnish some guide as to what to look for in non-flowering wood. There are, as a rule, and especially in some varieties, strong growing shoots which, as they do not terminate in a flower, we have called "non-flowering," and these give a supply of really good buds as far up as the wood has hardened, which is often more than half their length. We consider ourselves as fortunate when the supply of this class of wood is ample.

Immediately the buds are cut from the parent plant, the foliage must be trimmed off, leaving the lower portion of the leaf stalk, as far as the wings reach, as guards; then, denuded of foliage, they should be stood in shallow water or, far better, be wrapped in a piece of wet sacking and kept out of the sun. If the foliage was left on for some little time it would use up the sap contained in the wood and materially damage the buds by sapping their strength. The keeping of them in a damp covering, or in water, is most essential where the budder gets off his supply in the morning, as it may be several hours before he can use them all up, but the ideal is to insert the buds within a few minutes of their removal from the plants. To facilitate this the actual budder does not in

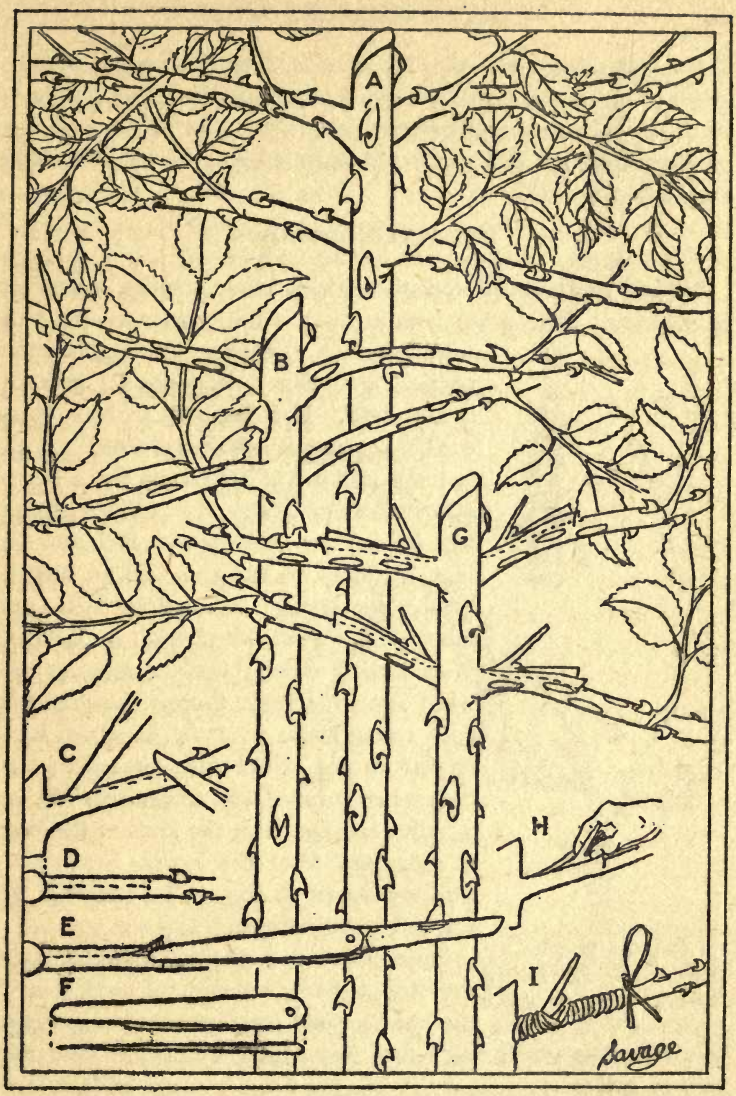

FIG. 7

A. A Standard Brier
B. A Standard Brier trimmed for Budding
C. Making the T-Cut
D. Plan of T-Cut
E. Opening T-Cut
F. Elevation Plan of specially made knife used in Budding. Note its tapering flat character. Also note that the blade (Fig. C) is rounded off at the point
G. Buds *in situ* ready for binding
H. Inserting the Bud
I. Tying Bud in. The wound must be completely covered

large nurseries cut and trim his own buds, the former being delegated to a competent assistant and the latter to a boy. This division of labour is in every way commendable, for a good budder when he gets set does not like to be suddenly brought up to go seeking for buds.

The Actual Operation

Now as to the actual operation, which is much easier to do than to describe. First, a boy goes in front of the budder to clear and wipe the stock clean, for budding, like the surgical operation it is, must be scrupulously clean. If it happens to be a standard, the wiping is not needed (see Fig. 7 A), but the rubbing off of thorns for a space of 2 inches is (see Fig. 7 B). Close behind him follows the budder, who first cuts his bud, shield form, about an inch in length, barely penetrating at its deepest to the heart of the wood from which he cuts it. With a flick of his thumb he removes the wood from the bark, though sometimes it does not separate so easily, in which case he has to dig it out with his knife; the bark remains intact and unbruised. If he is quite satisfied with the state of the bud as inspected from the inside, and which we have shown in Fig. 8, he proceeds to insert it into the stock.

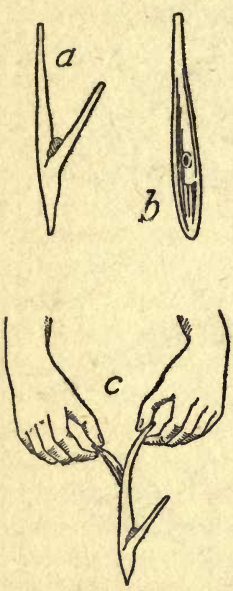

Fig. 8.—The Bud
A. Outside. B. Inside
C. Removing the Wood

Ninety-nine out of every hundred budders adopt the T-cut, and we think this is the quickest and most practicable method. The top cross-cut is made first (see Figs. 9 A and 9 B), then the vertical cut, starting from the bottom, using a sharp knife, which must be so skilfully manipulated as to make no abrasion on the stock beneath the bark. As the two cuts meet (see Figs. 7 C, 7 D, and 7 E), a slight side snick with the knife is given, which partly opens the way for the insertion, without force, of the sharpened end of the handle with which the bark is raised and held open for

the insertion of the bud. No undue pressure is exerted, for this would be likely to bruise something or other and possibly ruin the operation. The bud, taken between the thumb and finger of the left hand, is held in position so that it can follow instantaneously the opening of the bark (see Fig. 7 H), being slid into position as low down as the bottom of the vertical cut, which should never be too long. The budder then presses the bark home upon the bud, and, his part of the work being done, passes on to the next stock.

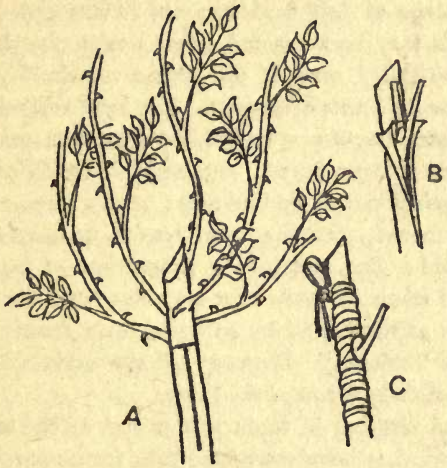

FIG. 9.—A. T-Cut. B. Inserting the Bud
C. Tying

Then comes the boy who proceeds to tie it in, and he does his work as deftly and as neatly as the budder does his (see Fig. 7 I). Taking a piece of budding cotton, or perhaps raffia from about 12 to 15 inches long, or longer for large stocks, he binds over the cut, beginning at the bottom, keeping a loose end with which to make his tie at the top. The binding is close to exclude air and wet, but the actual eye or " bud " is left free, being amply protected by the leaf-guard which has been left on for that purpose. Not only is the binding close, but it is also tight, and the celerity and perfectness with which experienced boys do this redounds to their credit (see Fig. 9 C).

After Treatment

If the season is moist and warm, a " growing " season, and the budding has been done in July, the stock naturally goes on growing and swelling, with the result that the binding round the bud becomes so tight as to constitute a very real danger. In this case it must be loosened, not removed, for it is not safe to remove the ties until quite the end of the growing season when the union has become perfect.

One advantage of July budding, not before noted, lies in the fact that buds may be inspected a few weeks after insertion, and any that have failed may, if the stocks remain fit, be replaced with quite good chances of success. We have availed ourselves of this many times because we have, no less than others, suffered from untoward circumstances. Atmospheric conditions sometimes tell greatly against successful budding ; stocks may have been unfit and perhaps forced, with the usual results, or anything else may have happened ; but certainly a proportion of buds have not " taken," and when we know that such has been the case we take a second shot at them, and by so doing have greatly reduced the proportion of " misses." Even up till the middle of September we have successfully accomplished this.

The general untying of buds at the end of the season, being purely mechanical, is boys' work, and calls for no special comment.

Spring Work

The next operation consists of heading back the stocks (see Fig. 10), and we have known this to be fraught with considerable danger and to cause the death of many buds which had successfully negotiated the winter. The thing is to do it at the right time. It is impossible to fix a date ; the season itself is the controlling factor. We have known mild, open seasons when early March has not been too soon, and other sharp, frosty seasons when they could not be touched till a month later. Let this guide you : Do not head back your stock to excite premature growth that the frosts and east winds may crumple up ; nor leave them till there is such a full flow of sap that the beheading must inevitably drain the plant of every

drop of its blood, leaving the bud to perish for lack of nutrition. Speaking generally, but subject to variation according to district, the end of March may be looked upon as a very convenient and suitable time.

The cutting back of the standards is fraught with much less danger than the dwarfs, and there are more reasons than one for this. In the first place there can never be the same rush of sap, seeing that it has to traverse up a long, dry stem. More, the main plant is not beheaded, only the young wood being headed back as in ordinary pruning. It is not cut back so hard as to leave the "bud" the only remaining eye, but always 2 or 3 inches of the brier are left beyond the bud, from which young growths are encouraged to function until the bud itself becomes active, when the brier shoots are rubbed off. By way of contrast, this illustrates how very drastic is the treatment which the dwarf budded stock is called upon to meet.

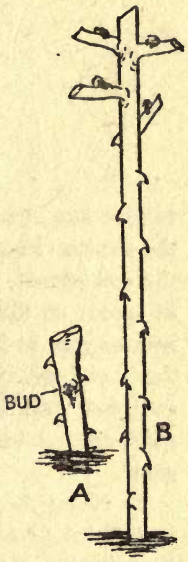

FIG. 10
Budded Stocks
Headed Back

A very natural propensity on the part of the stock in favour of its self, as distinct from the bud which has been inserted into its system, can readily be understood, and this is so marked that the rose grower has to constitute himself the guardian of his own handiwork. It appears determined to grow for itself of itself, and, to starve out the bud, it sends out numerous suckers to which it gives preferential treatment. The grower is equally determined that it shall not grow for itself, but devote all its energies to the stranger, hence he ruthlessly and remorselessly removes these suckers as fast as they appear, and if he is caught napping he will find the stock has beaten him. Thus his duty for some months is to keep down the suckers until the stranger growth has become so strong and so completely *the* plant that it can defy any suckers which may be put up.

When the bud has grown 2 or 3 inches, it must be supported, otherwise a very moderate breeze is capable of blowing it out.

Just one band of raffia embracing the bud and fastened round that portion of the stock which has been left for the purpose (Fig. 11) will suffice for the time being, but it is as well to get on with the proper staking and securing of every plant as early as possible, and

FIG. 11.—Securing the Young Growth of Bud

to give due attention to the tying as often as necessary throughout the season (Figs. 12 and 13). Beyond keeping the quarters clean, the soil stirred, and the plants tied, there is but little expenditure of labour on the nursery rose beds during the summer, unless the grower goes in for the luxury of advertising his roses by exhibiting them and winning prizes. Our experience is that the successful exhibitor gets all the benefit of a valuable advertisement as his chief reward, but that the unsuccessful exhibitor rather loses than gains.

By November the plants, as maidens, are ready for sale. This is by far the most acceptable stage at which to sell them, both from the seller's and buyer's point of view, and, having brought you from the propagation of the stock through its various stages up to the time of sale, we will wind up this section by putting in simple tabular form the various operations.

November.—Make and plant cuttings of stocks.
October following.—Lift and trim the rooted cuttings.
November–February.—Plant in nursery beds about 1 foot from plant to plant.
April–June.—Remove all suckers as soon as they appear.
July–August.—Bud the stocks with approved varieties of roses.
October.—Untie the buds.

March.—Head back the stocks.
April.—Temporarily secure the growing buds.
May.—Stake every plant. Remove all suckers.
May–August.—Tie all loose growths. Hoe frequently.
November.—Lift and despatch.

FIG. 12.—Standard—supporting New Growth

FIG. 13.—Dwarf—supporting Young Growth

Such in outline is the propagation of roses by budding which we have tried to make clear even to the novice. We have dealt with the mechanical parts of the operation and explained most of the technique, but experience alone can teach the many minor yet important factors which ensure absolute success. Fortunately, practice will reveal all these and will enable the novice to become an expert. That much accomplished, the great thing necessarily

follows, for we have never yet met an expert rose grower who was not also an enthusiast.

"Cut-Backs."

At the end of the selling season, there is bound to be a residue of "unsolds." It may be that most of them have been passed over as weaklings or as damaged goods, as it is seldom indeed that any good saleable stuff is left on hand. They have, of course, to be lifted, for they could not be profitably left, a scanty crop, on a large piece of land; neither would it be economical to scrap them, seeing that most of them can, by due attention, be made into healthy, saleable plants. So they are transplanted into new ground, and in close nursery order, care being exercised to keep each variety separate from the other. The unfortunate point is that seeing sales are going on till the very end of March, and indeed most always into April, the work of transplanting cannot be undertaken till the latter month, and this is abominably late unless the weather is propitious. By hook or by crook the work is always done, and what might elsewise be wasted are turned into good stock.

When lifting these plants, care should be taken to preserve all the roots, and the ends of any which may be bruised or otherwise damaged should be smoothly trimmed off. Cut away the dead top of the stock (a process known as "snagging") and plant just deep enough to cover the union of the bud with the stock, and at a distance of 1 foot from plant to plant and from 15 to 18 inches between the rows. Directly growth becomes active in roots and tops, prune hard back to good, healthy eyes, leaving as little of the old wood as possible, so that practically a new plant may be formed. From the new growth some of the best wood for "budding" may be obtained; neither is there any difficulty in disposing of the plant the following season if well grown, for there are many people who prefer "cut-backs" to maidens. If the term "cut-backs" has grown to denote inferiority it is only applicable to plants which have not been subject to the treatment here described, for in some ways they may be distinctly superior.

"Cut-backs" will produce an abundance of bloom, not as a rule up to exhibition standard, but good, long-stalked blooms for selling.

There are, however, a few varieties which produce exhibition flowers better than the maidens, so it can well be perceived that, on the whole, there is no reason why really excellent results may not be obtained by those who grow " cut-backs " for the cut flower trade.

With the differences incidental to the marked dissimilarity in their growth, unsold standards require the same treatment, and on the whole will give the same results.

CHAPTER VI

PROPAGATION BY GRAFTING

THE propagation of roses by grafting is in this country done under glass during the earlier months of the year, for the production of plants to grow on in pots or to increase new and scarce varieties in the quickest possible way. Such varieties as Marechal Niel, W. A. Richardson, Climbing Niphetos, Climbing Liberty, and others, are grafted by the thousand every year, making first-rate, saleable plants several feet in height within the course of a single season. In nurseries specialising in roses, the grafting begins at Christmas, or even earlier, and goes on up till Easter, batch after batch being passed through the propagating pit according to requirements and accommodation.

For the earliest work, stocks should be potted into 3-inch pots a year before being wanted, and plunged out in nursery beds to become well established, and develop a strong root system which is invaluable for the purpose to which the stock is to be put. In November, the first batch of these is lifted and taken into a temperate house to start after being pruned hard back, and this is followed by other relays at short intervals, the object being that at any given time they should be in advance as regards activity of any of the scions which it is desired to graft on to them.

Before we go into the actual process of grafting, we may as well glance at the accommodation provided for it and the conditions essential to success. A convenient form of house is one about 16 feet wide (see Fig. 14), 9 to 10 feet to the ridge board, and of a length varying from 40 to 60 feet. Occupying the centre and running to its full length is the propagating pit, from 6 to 7 feet wide, built with bricks as a chamber about 3½ feet in height and containing at a suitable elevation two flow and two return open hot-water pipes. These are covered in with slates, which must be sound and strong, and upon these is placed 6 inches of coco-nut fibre. The open hot-water pipes will permeate this fibre with a moist heat of a regular intensity where the ordinary hot-water pipes would

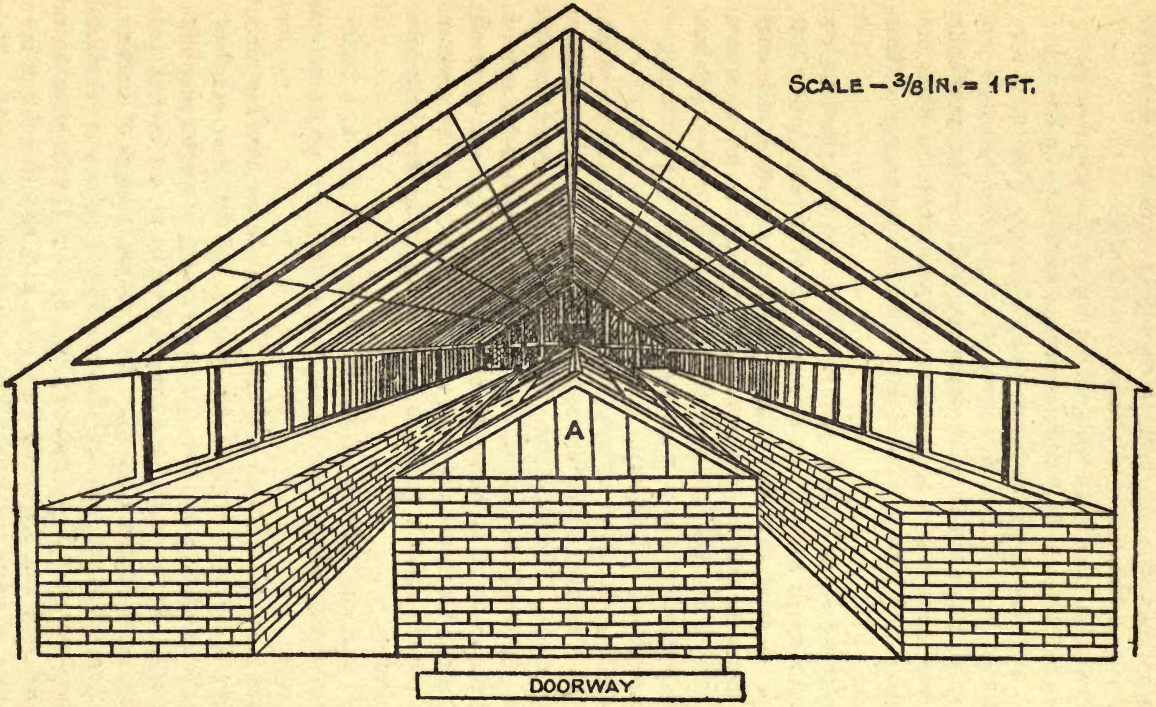

FIG. 14.—Rose Propagating House

give out an arid or dry heat, so no further explanation is needed as to why the one is so much better than the other.

A wooden framework rests on the top of the brick containing walls, and this is made to accommodate a double row of 3-feet lights, back to back and sloping down from the centre. The frame is of sufficient depth to allow of a space of 6 to 9 inches above the bed of fibre. There you have the propagating bed complete, practically the very nerve-centre of glass-house nursery work, for when not taken up with roses it is in continuous use as a propagator of other stock.

Allowing for an 18-inch path to run around this pit, there yet remains ample room for an all-round run of staging about 3 feet wide. A word as to this staging. In most modern greenhouses the stages are built of open woodwork, and while we are quite sure that this is not the best arrangement for ordinary plants, we are perfectly positive that it is not the best in a rose or general propagating house. We object to the open woodwork; what we want is a substantial stage covered in with strong slates upon which an inch of ashes or sand will form a bed capable of retaining moisture and warmth. The hot-water piping on either side should consist of two flows and two returns, with adjusting valves so that at certain periods it may if necessary be shut off for a time, and as in all probability the house will be put to other uses during the summer and autumn months provision must be made for very adequate ventilation.

We can now visualise the house, and this will give us a better understanding of the routine of rose grafting we are about to describe.

Just after mid-December the earliest stocks are swelling their buds preparatory to breaking into growth, and that is an excellent stage at which to graft them, the scions being, of course, perfectly dormant. So far as we have been able to do so, we have shown in the accompanying illustration, the progressive stages of grafting in a form which can be easily followed. Fig. 15 A shows us the stock as it appears when fit for grafting; Figs. 15 B and 15 C the same stock headed back and prepared; Figs. 16 A, 16 B, and 16 C the fitting together of scion and stock; Fig. 16 D tying on the graft. We think the veriest novice can follow these, though we must be

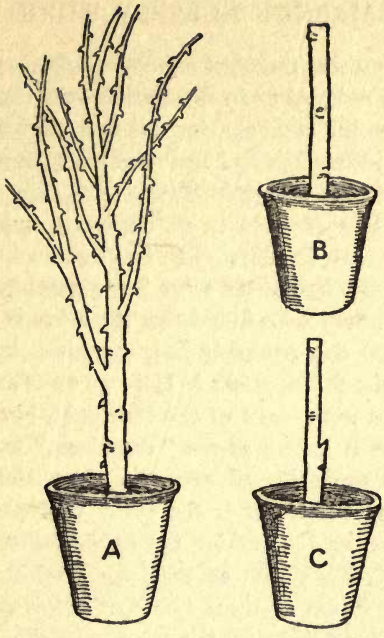

FIG. 15.—A. Rose Stock. B. Headed for Grafting. C. Cut ready for Graft

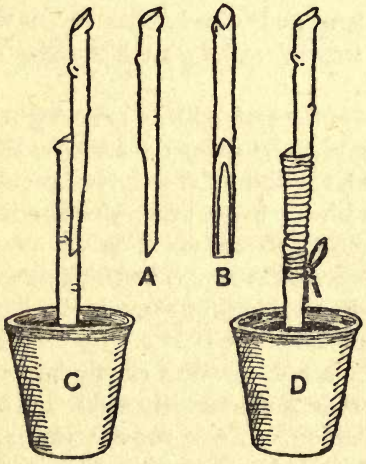

FIG. 16.—A and B. Two Views of Graft on Scion C. Graft in position on Stock. D. Tied to Stock

careful to point out that there yet remains something or some things which cannot be reduced to an illustration—the cleanness, the *vim*, the accuracy, yes, the accuracy, for this is a surgical operation and should be as delicately handled and precise as though the operator was a surgeon dealing with animal life. If it should be other than accurate, there is a probability of imperfect union from which fatal weaknesses may develop. The fit must be faultless, the face of the stock and the face of the scion being absolutely flush.

But it will in practice be found that the scion is seldom as large as the stock, and this probably happens nine times out of ten, How, then, can the fit be perfect ? Here we must explain. Between the bark and the wood—not of the rose only, but of all plants—there exists what is known as the " cambium," that is, a layer of cells and tissues extending all over the plant, along which all its activities are conducted. It is the really vital part of the plant, and to ensure successful grafting the cambium of the scion must be in close and direct contact with the cambium of the stock, for it is on the fusion of these two that union entirely depends. It would be the ideal thing for the scion to be the same size as the stock, so that this union may be cemented on both sides, but the ideal is seldom attainable and we have to be content with the nearest approach to it that we can make ; so the only thing left is to see that the two cambiums are in direct contact up one side, leaving it to the superabundant energies of the stock to callus over the unused portion of the cut.

The binding on of the graft without removing it from its precise position is a thing to be set about carefully, for the scion must be completely covered, the ligature at each turn round the stock being in close contact with the one above. Moisture is thus prevented from insinuating itself between the scion and stock, and so interfering with the action of the sap. The binding must be quite taut, and not likely to loosen itself for some weeks, by which time the union will be complete.

So much for the actual operation of grafting, which though its detail takes some time to describe, is quickly and easily done when once the way is known. It now remains with us to give details of treatment, and it is upon these that the progress of the grafts must largely depend.

As soon as the graft is bound on, the stock being in a 3-inch pot is plunged in the propagating bed up to its rim, this bed, you will remember, being made up of coco-nut fibre heated by open hot-water pipes running beneath (see Fig. 17). The heat in the bed, that is, the " bottom heat," should be maintained at about 70 degrees Fahrenheit, and the temperature of the frame would then approximate 60 degrees. The pots should be plunged in straight lines almost close together, the angles being all filled in with fibre, and the straightness of the lines facilitates the watering, for it is necessary always to water with a small pot without a rose, to pick

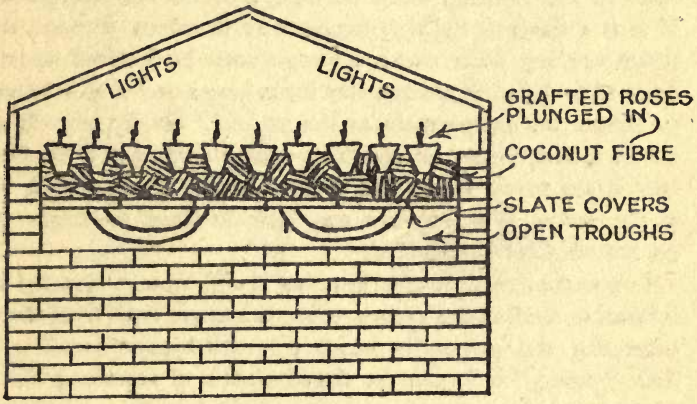

FIG. 17

out the pots which actually require water, leaving the others till they do, and to do it without wetting the graft and stock. Please note that newly grafted stocks are not to be watered overhead, certainly not until sufficient callus has formed to preclude the chance of any water finding its way between the graft and stock.

The moist heat imparted to the bed by the vapour arising from the open pipes gives rise to a considerable condensation, so much so that before the lights are taken off every morning the water hangs on the under side in large globules. This makes the removal of the lights at a comparatively early hour very essential, and to lessen the time of the exposure of the bed a careful propagator carefully wipes the moisture off the inner side of the lights so that he is able

to replace them after a few minutes, though he may find it quite necessary to leave a small vent on for probably an hour. This was our own invariable custom, for pains must be taken just as much to prevent excessive moisture as are taken to prevent aridity.

A temperature above that we have stated may become dangerous in exciting the scion into growth before it has become sufficiently incorporated with the stock to draw nourishment from it. This is almost bound to happen to a certain extent, though the percentage of precocious growths is very small, but when it does happen it generally proves fatal unless the subsidiary side eyes are able to take up the running when the active centre eye has given up. If then a dangerously high temperature threatens, through erratic stoking or any other cause, a wedge must be inserted under the front of the lights to create a vent for as long a period as is necessary to reduce the temperature to the normal. Really, growth must not be forced, for forced growth is weak growth, and if the bottom heat is too strong it is a bad preparation for young plants which in the course of a few days may have to stand on stages where no bottom heat is provided.

In about a fortnight after grafting it will be seen that the stock is forming a callus and endeavouring to recover itself from the rude beheading and cutting to which it was subjected (see Fig. 18). This " callus " is formed by the exudation of sap along the lines of the " cambium," before explained, and in this endeavour to recover itself it incidentally embraces and joins itself to the scion, or it might be more correct to say it joins the scion to itself because the eye of the scion can alone provide an outlet for its energy. In its struggle to live its own life it will from time to time produce eyes, somewhere or other, even if it be on the root itself, but these are removed as soon as they appear, and the energies of the stock, willy-nilly, are driven into the scion as its only means of life. This process of union may take some time to thoroughly complete itself; sometimes a whole season passes before it can be said to be perfect and real fusion achieved, and this will suggest to any reader that the whole of the season must be, more or less, a time of nursing for the plant.

When the graft has fairly taken and begins to unfold its first leaves (see Fig. 19) it must be removed from the frame, or the great

probability is that the dense moisture would cause damping off, or if it did not cause that a few days too long would make the plant inherently weak. Its place is now on the staging, where the additional light and slightly harder conditions will make for strength and consolidation. It must still be shaded against bright sunshine, still be strictly rationed in supplies of air, for it is but an infant, and this is part of the nursing. But it soon becomes innured to its new environment and conditions and asks for more light, more

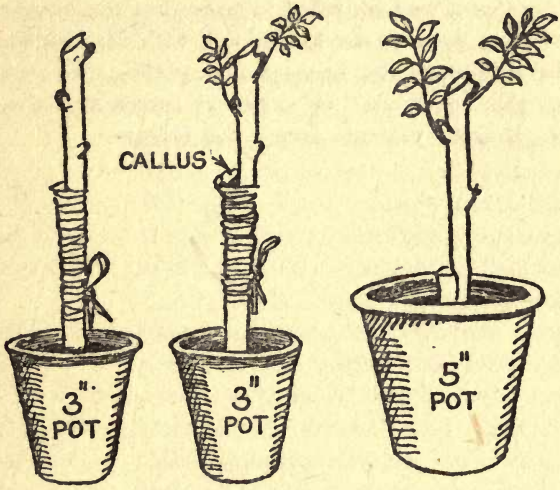

FIG. 18
After a Fortnight

FIG. 19
One Month
after Grafting

FIG. 20
At Six Weeks
Potted into 5" pot

air, and these must be gradually increased. Then, seeing how impoverished the soil is in which it is growing (after twelve months of the stock) it begins to hang out signals of distress by the time it has been grafted a month, and a move must at once be made toward providing it with a larger pot and richer soil. A compost is prepared, consisting of one half loam, the other half leaf mould and rotted manure in equal proportions, with an admixture of sharp sand, into which the young, grafted plants now fairly launched on their way are potted (see Fig. 20), the size pot best suited to this stage being 48s. or 5-inch.

Until they have established themselves in these larger pots, they should still be nursed until by their growth they demonstrate their fitness for taking care of themselves, and then, but not till then, they are removed to cooler houses and treated no longer as exotics, but as hardy English roses.

We trust that as we have brought you step by step through the " mysteries " of grafting we have made ourselves clear, leaving nothing ambiguous or not understandable. For many, many years we have reckoned this work, on a large scale, as part of our usual routine, so that if we have failed to make clear the actual processes it must be put down to our lack of skill with the pen, and we can plead that the propagating house and the potting shed are not likely places to pick up " style " or to perfect ourselves in the painting of word pictures. Let this excuse our failings.

CHAPTER VII

ROSE CUTTINGS UNDER GLASS

We intimated in Chapter II that we would deal with the propagation of roses from cuttings under glass when we reached the subject of pot roses, and, seeing that rose grafting comes really under this heading and has already been dealt with, we must redeem our promise here. The practice is not so largely resorted to as it used to be, yet it affords a very ready means of increasing stock, and of supplying a steady demand, that for pot roses on their own roots. It is done usually in early June, when a good supply of wood is available from indoor plants, especially such varieties as M. Niel, Niphetos, C. Mermet, Killarney, Liberty, and others that have just finished blooming and consequently have hardened their wood. Pot plants of the newer varieties of which there may be a scarcity, may also be called upon to furnish their quota, any trimmings of which, if fairly solid, may be used as cuttings—a cutting from every eye if desirable but from every two eyes, one at top and one at bottom if possible (Fig. 21 A).

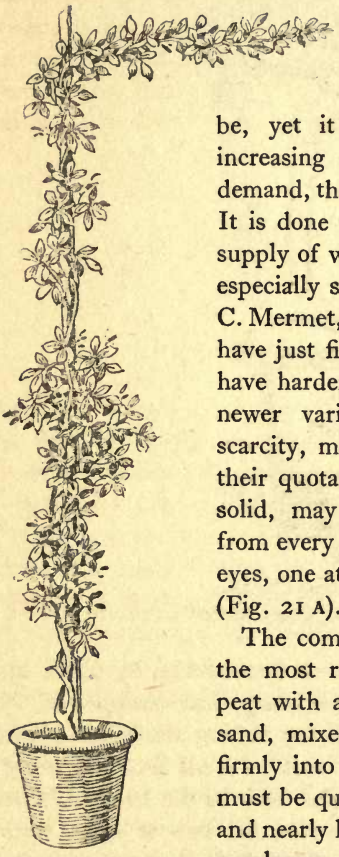

Fig. 20A.—Climbing Niphetos from a Cutting

The compost in which these cuttings strike the most readily is made up of finely sifted peat with a generous addition of sharp silver sand, mixed well together and pressed very firmly into 48-size pots (5 inches). The pots must be quite clean (it is better to wash them) and nearly half filled with small crocks over the one larger crock at the bottom (see Fig. 21 B). A pot this size will take a dozen cuttings, which are inserted at 1 inch apart, or there

about, around the edge of the pot, being made quite secure in their hold by the dibble (see Fig. 22). When the pot is filled it should be held quite level and immersed in a pail of water to thoroughly wet it through, then be plunged in a hot-bed, well shaded and kept quite close, opened only once every morning for the purpose of sprinkling or letting out superfluous moisture. Daily attention must be most scrupulously given, and as the foliage begins to finish and fall, as it will, it must be taken off, or it will rot that which still functions.

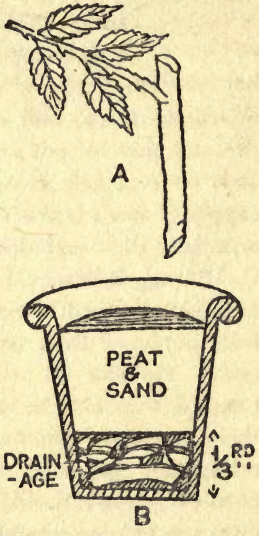

FIG. 21. A. Rose Cutting
B. Section of 5″ pot, showing Compost and Drainage

The process of rooting takes about three weeks, by which time probably all that remained of the foliage has disappeared, but directly rooting begins the eye of the cutting starts into growth and it must be immediately dealt with. Pot off into 60s, using a peaty and sandy compost and stand back in the hot-bed, where very careful treatment will be needed for two or three weeks, practically the same treatment as that which they were given as cuttings. It is only as growth begins and continues, as they become established, that freer treatment in ventilating, in watering, and

in the admission of stronger light, is called for. In about six weeks they will be sufficiently advanced to be no longer nurselings, and will require stronger soil in larger pots, and from this stage be given the same treatment as that recommended for grafted plants at the same stage.

This method of propagation is by no means to be despised, but no more must be expected of it than from other methods.

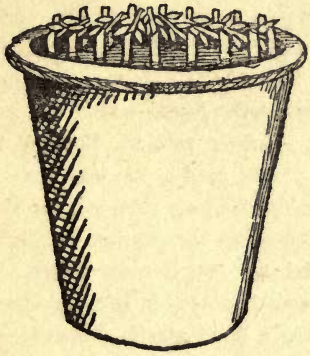

FIG. 22.—Rose Cuttings in 5″ pot

There will be losses ; these are inevitable, and it must be considered as not unsatisfactory if 50 per cent of the cuttings inserted materialise into saleable plants. We have come to look upon that as a fair result and one that is not unprofitable.

There is yet another method which we have often adopted with success. In January many of our indoor roses are pruned back for forcing, and this is done just as the eyes begin to swell. We have made cuttings of the prunings, say 3 to 4 inches in length, and have inserted these in pots or pans and stood them in an unheated house to come along at their own sweet will. Any heat applied would most certainly excite growth, and this we do all we can to avoid, rather hoping to see a gradual callus at the base and the emission of small rootlets before the eyes become active. We have some hundreds of plants by us, struck in this way, which we find economical, and tolerably certain. It is when these have rooted and require potting off, in March or April, that warm treatment must be given.

CHAPTER VIII

ROSES IN POTS

FOR so long as we can remember pot roses have been, are now, and always will be, a popular selling line for the nurseryman. In all its varied forms and varieties, whether standards, half-standards, dwarfs, miniatures, or ramblers, H.P.'s, H. Teas, Teas, or Chinas, there is a permanent demand; firstly, because they ARE roses (and nothing is likely to threaten the supremacy of the rose in these islands); secondly, because they are wondrously effective; thirdly, except the rambler section, because of their continuous blooming qualities; and lastly, because they are so economical, for when they have finished up their season they may be plunged in the ground and taken up for another season's use, or if past that they may be planted out and live for years. To the nurseryman himself, part of whose business it is to produce cut flowers, roses in pots are exceedingly good stock—something in the nature of a stand-by, for given proper facilities and the intelligent handling he can give them, he is able to cut roses for ten out of the twelve months, and sometimes every month in the year. Even the ordinary amateur, if he possesses the necessary glass and heat, may have a display of beautiful roses in April almost or quite rivalling that of June in the open, and this ought not to be thought less wonderful because of the ease with which it can be realised.

In order to produce out-of-season roses in quantity and quality, there must be a suitable rose house such as every rose specialist has, and perhaps we cannot better convey the idea of a convenient form of house than by describing one we built for ourselves. This house is 150 feet long by 24 feet wide, rising 9 feet to the ridge board. The sash bars resting on a wall plate 3 feet from the ground are 14 feet long; the 3-feet side walls being of bricks. Top ventilation is provided for by independent vents, for we have always objected to an installation of "gear." These vents are alternately placed on either side of the house, are 3 feet wide, so that there are 25 on each side. We never open more at any time than is actually necessary, though throughout the summer they are all open day and night.

The lower vents are really boxes with sliding lids built in the brickwork of the walls, and it was after mature deliberation that we adopted this system instead of having glass sides.

The floor of the house is level and divided into three beds. The centre bed is 10 feet wide, but as several iron supports run down the middle of the house and, further, as there are wires fastened to these supports on which permanently planted roses are trained, this wide bed is virtually two beds, each facing to one of the paths. In effect it might be said that there are four beds, each 5 feet wide, which with two paths each 2 feet wide equals 24 feet. The other odd foot is accounted for by the edging of bricks bordering the beds. Such a house as this was never intended for the hard forcing of early roses, so that what we want in January, February, and March are taken in relays to the forcing house as required. But the quantity of hot-water piping in it is well calculated to gently force the plants so that there is an abundance of bloom in April—a time at which it realises quite good prices. The piping is the ordinary 4 inch, and consists of four double rows : that is, four flows and four returns. A double row runs round the house against the wall and again around the path, and are so arranged that either portion may be turned off. There are a number of evaporation troughs resting on the pipes, which are always kept full of water when the roses are " in residence," as these, when the heat is on, have a moistening influence on the atmosphere, which is not only beneficial for the roses and their young growths, but materially assists in keeping the red spider and thrip in check.

It is into this house that we bring the young plants, both grafted and cuttings, when they have reached the stage we have followed them to in our remarks, that is, as soon as they have begun to take root-hold in the 48-size pots. They do not remain there many weeks as we consider that the proper ripening of the wood is best effected under natural outdoor conditions ; but while they are there, they are syringed twice a day and carefully watered and encouraged to make the strongest growth they are capable of by watering occasionally with liquid manure, because we know that the stronger the growth this year the stronger will it be after pruning next season.

When the growing season is nearing its end, say in August,

all these plants are transferred to the open and are plunged either in the spent hot-beds, or in ashes, where their welfare is still under close observation ; but during the early part of November they are brought back into the house, which is not yet heated, and stand there till January, at which time they are pruned hard back (see Fig. 23). In this pruning, every weak bit of wood is cut out. It would be but a hindrance to the plant if it was left, and we do not mind if only three or four good breaking eyes are left so that they

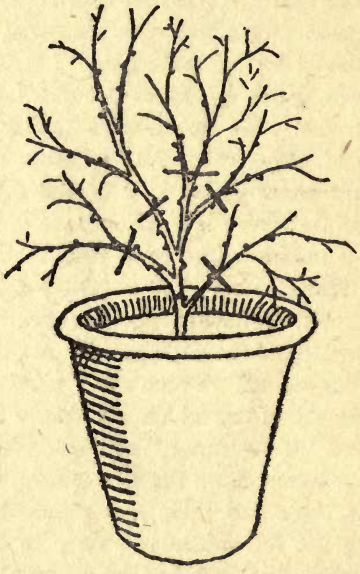

FIG. 23.—Pot rose—heavily pruned at marks

carry indications of strength and vigour, for that is what we are after. If a pot plant has only three shoots, each one crowned with a good bloom, that is a plant which will sell ; but be it never so bushy, with a few puny flowers, it is not a seller. So you see what we aim at : strength and quality. Even if grown for cut bloom, the same applies, for three good blooms on long, stout stems are worth more than double their number if poor and weak-stemmed.

Let us follow these young plants a little further. By the end of April their first flush of bloom is nearly over, and they begin to make tracks toward another crop. But their numbers are pleasantly

thinned ; the majority have found purchasers and have gone. If necessary, what remains must be top-dressed and watered with liquid manure to make the second crop as good as the first, that is, if it is thought advisable to clear them out while in 48s. But if the plants are going to be developed and made double their present value, now is the time to shift them into 24s, which we consider the ultimate size for market work. Mix a compost, half turfy loam, half rotten manure ; add sand and crushed bones,

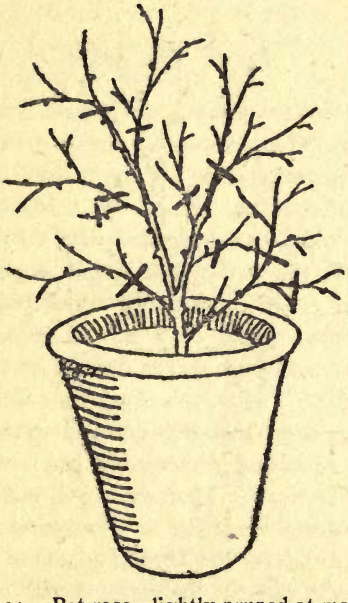

FIG. 24.—Pot rose—lightly pruned at marks

and when thoroughly well mixed ram it well home into the pots. See that the drainage is really good, for that is a thing we are always insisting upon. Remove any weak shoots which reveal themselves when potting, and always remember that a weak shoot on a pot rose is not only weak in itself but weakens the whole plant. Reduce the plant to three shoots, if necessary, but retain more if they are strong. These plants will require the usual nursing given to newly potted plants for a week or two, but this must not be carried too far. Plenty of air and plenty of light after the first week will

induce sturdier growth and larger blooms. As the roots move, the buds will form, and by mid-June many of the batch will be fit for sale. Sales should be pushed, the object being to clear out, to realise; then, whatever proportion of plants are left, should be plunged straight out in the nursery beds. There they will go on growing, and later on any likely plants may be lifted when in bloom, say in September, and sold. Such, usually, is the history of the pot roses which have been reared from grafts and from cuttings, and as they are passed through the nurseryman's hands.

Lifted Pot Roses

In selecting plants from the open ground for potting it is well not to choose those which show the strongest and largest growths, nor those which appeal because they are bushy. Those very strong-growing plants suffer more through the drastic measures taken to bring them into complete subjugation than do plants of a smaller growth. After all, the root-run in a pot is strictly limited, and as a large head of growth is generally connected with a large root system, the confined limits of a pot of reasonable dimensions will scarcely carry sufficient soil to sustain it, and most certainly not to strengthen it. The very bushy plants have too much small wood, and as every shoot makes its demand upon the roots, a strain greater than the restricted root-system can bear is put upon it, and the growth is weak. Medium sized but perfectly healthy plants whose roots will be found to correspond very nearly to the head-growth are decidedly the kind of plants to select, and within reason the fewer the growths the easier it will be to form the kind of plant you want after it is established in the pot. Probably if we had to lift roses to go into comparatively large pots, say 9 inches, we should give different advice, but we are hampered by market conditions which simply rule out any pots above size 24; still, we should always avoid any plants the growth of which appeared to be gross.

Very obviously the best time to set about rose potting is as early in the autumn as possible, but the exact date must depend entirely upon the season. In a normal year, from the third week in October to the second week in November (inclusive) would be

the best time, but we have known abnormally hot, dry autumns when the plants have been ripened at a still earlier date, and directly that has come about the time has come to pot them. But we would not be too early ; the determining factor is the ripeness of the wood. If lifted too soon, that is, before growth has actually ceased, the unripe wood will shrivel and need nursing back to freshness again. Nothing in the nature of an artificial check is desirable, for the whole point in potting is to induce an immediate output of new roots into the new soil, to get the plants really established before winter, and, by so much, ensure the prompt and strong breaking of their eyes at the first flush of spring.

Ought roses lifted for potting purposes to be pruned ? If we use the word pruned in its literal sense, we reply, " Certainly not," but in another and more general sense, " Yes," that is, they benefit by being " trimmed." There should be a little shortening of the longer growths, and a little cutting back of the roots to remove the rough ends, damaged by lifting. But do not let us call this " pruning," or we shall never make ourselves clear. The little shortening here recommended could not be indulged in but for the fact that the season is so far advanced that all danger of excitement to growth is remote.

The Potting

Lifted roses must be potted with due care, not on the " piece-work " system, but with full attention to detail. They call imperatively for clean pots, thoroughly well crocked and good soil well rammed home. If not pressed quite solid, blind growths will be the result. The compost must be of the best and richest, good loam with no more than a fair proportion of nitrogenous manure, but with the addition of phosphates, preferably in the form of crushed bone, and potash supplied by just a modicum of burnt vegetable ashes. While on the heavy side, it must not be a cold, unworkable soil, but a warm, root-producing medium. The character of the loam used matters a great deal, the ideal being rich top-spit from an old pasture. We see the name " loam " applied to every kind of heavy soil, nowadays, and from an agricultural point of view this may or may not be correct, but it does not apply in horticulture.

We cannot admit anything and everything short of actual clay and utterly devoid of the smallest suspicion of fibre to be our idea of loam ; we want the genuine article—rich, holding, fibrous, and fat, and such a loam must form the foundation of the compost if we want pot roses to do their best.

In potting, the union of the bud and stock (in budded roses) should be level with the rim of the pot, neither raised above it nor buried beneath the compost, and this will leave the union just clear of the soil, so that any suckers appearing around the joint can be easily and completely removed. For a few days the plants when potted should be stood close together in a cold house or somewhere near, where they can be under observation, and as soon as it is seen that root-action has begun they should be plunged out in nursery beds. For we do not hold with attempting, even moderately, to force roses until they have been a year in pots and become thoroughly established. We plunge them, say, in December, the rims of the pots, perfectly level, being flush with the ground, but not covered in, so that we may the better treat them throughout the next growing season by watering when dry and by feeding when necessary. If the pot is completely buried it is impossible to keep such an intelligent observation upon them or to water and feed them without waste.

CHAPTER IX

ROSES IN POTS (*continued*)

Pruning

The plants must be pruned early in March if the weather is open but not so early if it be sharp and cutting, and the only object to be borne in mind in this their first pruning is the making of the plants. Give no thought to the producing of exhibition blooms, none to the production of any blooms at all—they will come of themselves—but concentrate on building the plants, so that in due course when they are taken indoors with definite and exacting work to do they may be well equipped for it and account for themselves satisfactorily. Incidentally, some of them will never reach the houses, for it is quite probable that a few may be lifted and sold when in bloom during the ensuing summer, but as they would flower just in the midst of the rose season their value would be the minimum and the demand for them very desultory. They were potted and plunged and treated for next year's house work, and that must not be lost sight of, for only so can they be turned to profitable account.

The first pruning must be drastic, hard ; it cannot be too severe provided the cuts are made just above selected, plump, and promising eyes, facing outward (see Fig. 23). A multiplicity of growths is not desirable, but a few strong growths are. We must so direct our efforts as to produce them. Completely remove every weak growth, for they encumber the plant and are useless. If the resultant breaks appear too numerous, rub off the superfluous ones, especially the weaker and those growing into the centre of the plant. These are very simple rules and it looks almost impossible to go wrong on them. Yet we have seen plenty of plants spoilt in the pruning, owing possibly to the adoption of a more complex system, or more probably to that of rules more empiric.

Treatment

We have now the satisfaction of seeing an adequate number of selected healthy plants well started on their new career under

favouring circumstances. They are in specially prepared compost, in suitable sized pots, scientifically pruned and under constant observation, so that with all these in their favour all they will need is intelligent treatment. They are endowed with no immunity against the attack of pests ; they will get dry under sweltering heat ; they will exhaust the soil in due course, and " intelligent treatment " implies that these will be anticipated and provided against. Adhering to our oft-expressed preference for preventive as against curative measures, we strongly recommend during the growing season a weekly syringing with an insecticide, even if it be nothing stronger than the good old tried method of a Quassia chip solution. If this was done twice a week during May and June it would not be too often. The maggot, " the worm-i-th'-bud," is a great depredator, but if it defies the insecticide its presence can nearly always be detected in the curled leaf before it has time to attack the bud. The aphis, or green fly, is of all pests the most persistent and, fortunately, the easiest to destroy, and it is up to us to go one better in the matter of persistency in making the position untenable for them. Mildew may attack the foliage ; when it does it generally denotes some inaction between moisture and the roots ; possibly ineffective drainage or faulty watering. If the attack is not too bad, a syringing with a weak permanganate of potash solution will kill it ; if severe, apply flowers of sulphur locally, but in either case find out if possible what caused it and correct the treatment.

Feeding becomes an important matter when the plants have nearly attained full growth, for by that time they have made great demands upon the limited quantity of compost contained in the pots, and require a sufficiency of food to complete their growth and to carry them on until the demands die down at the time of ripening. We know of nothing better for the purpose than a liquid made from soaking a bag of cow-droppings in a barrel of water, usable when of the colour of ordinary coffee. This should not be used more than once a week throughout July and August, after which time ripening, rather than growth, must be encouraged. If the summer be dry and hot a mulching of strawy manure is of direct benefit to the plants, for it screens the soil from the full force of the sun and prevents the rapid evaporation of its moisture.

But pot roses at this stage ought not to be heavily manured or too often fed.

Housing

Early in December, that is before the plants have been frosted through and through, those intended for the season's forcing should be lifted, cleaned, and transferred to a cold house. Very severe frosts will sometimes damage the wood, and more often than not this is at the very spot where you most want it to be sound and perfect, and that is why we suggest the protection of a cold house. For even when the frost may not have actually damaged the wood and the eyes, it will probably have left its mark in the pith, and this must of itself prove somewhat of a constitutional check upon a plant which you are anxious should grow quickly and strongly without any check at all.

About the middle of the month a suitable number of the most promising plants should be selected and pruned, but this pruning must not be so drastic as that of a year ago. It is still right to remove every weak growth, but instead of cutting back for *growth* you cut back for *bloom*, and the cutting is not so drastic. In Figs. 23 and 24 we have in outline presented the two methods. The plants you now select will form the first batch to be taken into the forcing house, but not without undergoing an intermediate stage which must be passed in an intermediate house, because if they were introduced immediately to a high temperature the probability is that many of the growths would be blind. Give them two or three weeks in the temperate house and all their life springs will set in motion quite naturally, after which they will be quite ready to respond to more forceful treatment. It is when the eyes are almost at bursting-point that it is perfectly safe to put them in the forcing house where the temperature can be maintained at not less than 60 degrees Fahrenheit. The atmosphere of this house must be humid, in which case a daily syringing with tepid water will obviate the necessity of heavily watering the plants until growth has become well advanced.

The plants should not be placed too near to the hot-water pipes, for there is something in the fumes or heat waves radiating from them that is inimical to the rose like the hot breath of the Sahara

desert, where roses do NOT grow. Stand them, not too thickly, on a staging on which there is at least an inch of ashes or sand, and let their whole environment be one of moisture. Do not overlook the fact that the maggots are death on indoor roses, and must be looked sharply after and exterminated. Watch for the curling leaf and find your monster inside. A good daily playing of the syringe is the best way of keeping down the green fly, but if curative methods have to be resorted to use a weak solution of soft soap and paraffin.

As the plants advance they must be carefully attended in the matter of watering, for there is nothing a rose in a pot more keenly resents than to be allowed to run dry. Take the trouble to inspect every pot, rap it sharply with the knuckle, and if it rings then water it; if not, leave it till the morrow. Admit but little air, and that only when the weather is open, though when the sunny days of February come along the supplies of air must be increased with discretion.

When the flower buds have formed, a weekly watering with weak liquid manure will help them very materially and will produce flowers of some substance on long, stout stalks, and remember that a great deal of importance is given to the length of the stalk.

Every fortnight a further batch of plants must be brought forward and given identical treatment, or the regular supplies of cut bloom may be interfered with and spoil trade. Spasmodic supplies must be avoided—regularity must be maintained, or your market suffers.

We have referred to the importance of growing roses with long, stout stalks, and this involves a selection of varieties, for there are many roses which cannot furnish these. As well as by using your own judgment and imposing your own selection on the market, it is a good plan to keep an eye on what is most in demand and is high in the esteem of buyers. It would be quite contrary to our character to advise any slavish following of other people's fancies, for it is always open to the enterprising grower by his own prescience and sound judgment both to forestall and influence the market and thus dip his cup in the cream. It is very rare indeed for a good thing presented in good form to fall flat, and the men who can offer this are the men who lead. Every novelty, every new

line offered on the markets, if it has merit to recommend it, is eagerly bought, so there is nothing to bind us down to the stereotyped and conventional. But the very fact of its being easy to launch first-class novelties makes it almost impossible to profitably market lines which do not come up to established standards.

As existing types of what the market really wants we will mention just a few varieties in different colours :—Frau Karl Druschki and Kaiserin Augusta Victoria (whites); Killarney, Mde. C. Testout, Mrs. J. Laing (pinks); Liberty, J. B. Clark, Richmond (reds); Mde. E. Herriot, Los Angeles (coral and yellow); Prince de Bulgarie (flesh); Golden Ophelia (yellow). Old standard varieties such as Marechal Niel, Niphetos, Catherine Mermet, La France, and Perle des Jardins are, even now, not to be despised. Personally, we do not think their course is yet half finished, for there is yet much virtue left in them. Who, for instance, is bold enough to foretell the time when Marechal Niel and La France shall be naught but memories ? It may possibly be that our own mounting years have endeared some of these old varieties to us, and that we may look upon them with a certain bias in their favour, but calm consideration convinces us that notwithstanding the advent of so much that is good among the new, these sterling varieties of last century possess in themselves so many elements of value that the greatest novelties lacking them would find it difficult to achieve popularity.

When the roses have been cut and marketed, the plants still call for special treatment, for neglect at this time might well ruin their constitution and detract considerably from their future value. They should at once be removed to the temperate house, where the thermometer will register a mean of 55 degrees Fahrenheit, given a slight rest, and then allowed to start a new growth at their own pace to furnish another crop of blooms. Although the season will by now be more favourable to them, it must not be expected that this second crop will be quite up to the standard of the first, but assisted by weak applications of liquid manure, they may yet be of really good quality and saleable at reasonable prices. They may make a very useful supplement to those now in bloom in the forcing house, and will come just at a time when the demand is increasing, probably in March. After the second crop has been

cut, do not be so foolish as to drive the plants on for a third. Their serious work, proper, is done ; they need and deserve a rest if their strength is to be maintained, though in the course of nature they will continue to bloom throughout the season.

At all events, there must be some replenishment of the soil, and this is best provided for by removing about 2 inches of the top soil even if in doing so some of the roots are exposed. Replace with compost similar to that in which the plants were potted and ram it on firmly, after which they should be reconsigned for the remainder of the season to the nursery bed from whence they came. It may be thought by some that it would be advisable to re-pot instead of top-dressing them, but we do not think so ; and as a rule this would follow in due course next season. We do not wish to unduly increase the size of the pots, and our experience is that with this top-dressing, supplemented by heavier feeding when again housed, the plants will carry well through another forcing season on a regime at once economical and efficient.

CHAPTER X

ROSES PLANTED UNDER GLASS

We have as yet made but the briefest reference to roses planted permanently in the houses, but we feel they call for some special attention. Being a permanent crop it is a matter of supreme importance that the very best should be obtained from it. Considerable thought should be given to laying it out to the best advantage, and as much care should be expended on the making of the borders as though they were intended for vines or peaches. The old soil, if unsuitable, should be bodily removed to the depth of 18–24 inches and a new compost prepared. The drainage is the first consideration, brick rubble and sherds being far better material than cold, unsympathetic clinkers and stones. In making this drainage we are, in effect, taking out a policy against mildew, canker, and other ills that roses are subject to, so it is very essential that this should be done thoroughly.

If the soil has been removed to the full 24 inches we consider that 6 inches of drainage material is not too much, but if taken out to the ordinary 18–20 inches, more than 4 inches of drainage will not be necessary. Less than that would not suffice, for the compost we are about to recommend will be on the heavy side and retentive in character, so that effective drainage is a vital matter.

Immediately over the drainage flags of turf should be laid, and on these 4 inches of half decayed cow manure, then about 20 inches of compost to allow an inch or two for settling down into place. This compost, based on a calculation of ten parts, will consist of :— 6 fibrous greasy loam containing an element of clay ; 2 well-rotted cow manure ; 1 decomposed leaf soil, and 1 made up in equal portions of coarse sand, mortar rubble, ¼-inch bones, and ashes from burnt spear grass or other vegetable refuse. This forms a well-balanced compost replete with nitrogen, potash, and phosphates, and of a texture well proven to be acceptable to the rose.

The time to set about preparing a house for roses is during October, so that all may be complete and ready for planting quite early in November. Given a week or ten days in which the compost

may settle down, it will bring us to a very suitable date for planting, viz. about the end of the first week in November. Select good plants from the open ground, plants with a good constitution and plenty of vitality, preferring those with a few strong growths to those which have an abundance of weaker shoots. The roots must be as perfect as the top growths and the plants should be carefully lifted so as to damage them as little as possible.

Make the selection of varieties with due regard to their reputation on the market, with perhaps the reservation we have already laid down—do not be led away into planting fancy pet varieties, nor any but such as will stand the test as " market roses," for the cut flower trade is the only one for which such roses can be grown. You want to bank upon selling every rose produced, therefore short-stalked varieties or those which have Marechal Niel's bad habit of drooping the head must be ruled out, unless you have a special demand for any particular kind for florist's work. They must also be perpetual bloomers, not the once-a-year class, but the " cut-and-come-again " sorts which are already busy about the second or third crop while the first and second are not yet finished.

Planting

If the rose house runs from north to south, well and good ; if not, the roses, so far as they may be in rows, must be planted in that direction. If planted in fairly open order the direction of the lines is not so material if only the sun and the full daylight can play around each plant. There being so much diversity in the growth and requirements of the various kinds, no uniform rule as to distances apart can be laid down ; many will grow as bushes, but others again will need training on wires so that their arrangement must be left to individual requirements. The only things one need insist on are the provision of adequate space for every plant and their arrangement so that no plant may rob another of its place in the sunlight. Overcrowding must be guarded against, and more especially the blanketing of shy growers by those that are more robust.

The actual planting in the new soil will be a pleasure because the compost is such as an intelligent grower loves to handle. Open

out a sufficient space with a spade and against the back wall of this the stem of the plant may rest while the roots are spread out, radiating fan-wise over the rather shallow depression. The spreading of the roots in a lateral direction at an average depth of 4 inches is much to be preferred to any method which fixes them almost perpendicularly into the soil, for these surface roots will produce the maximum of flowers while the deep-running roots will produce the maximum of growth. We, of course, look for both, but we have to specially provide for the former, being quite sure that in due course the plant will do the other for itself. Do not make the mistake of burying the plant itself too deeply. The union of the bud and stock must be barely covered, and the soil lightly trodden to make it firm, but not hard, over the roots and around the stem. In all probability if this is done, the rose will of itself start rooting independent of the stock, and this is, of course, all to the good.

Unless sunny weather has dried the compost, water should not yet be given to the new bed ; but a plentiful supply of fresh air must be passed through the house continuously throughout the winter. A month after planting, when new roots have taken hold of the compost, a careful, but slight watering can be given *if the condition of the soil calls for it*, but do not administer a real soaking—that will not be needed for some months ; but plenty of air is imperative, even during frosty weather, air regulated and yet abundant.

In February the first pruning takes place, and this, as we have pointed out in our remarks on pot plants, being the first, must be drastic, so that you can form and build up the plants to your liking. Do nothing to hasten growth, but do all you can to consolidate and strengthen by a slow growth, so that the foundations of a long-lived, prolific plant may be well and truly laid. As the growth begins, a slight syringing every bright morning will be of great benefit and incidentally will help to discourage the green aphis. Regulate the number of breaks by rubbing off those that are superfluous, for the first season at least, restricting the number according to the size and vigour of the plant.

No regular fire heat must be maintained, indeed none must be put on till the foliage has unfolded, and then only for occasional protection during sharp weather or to guard against an expected

sharp night frost, for if grown cold and hardy throughout the season in which they are establishing themselves in the new soil they are the more likely to make vigorous roots and strong growth, which will assure their profitable future. Watering will need to be more copious and frequent as the warm weather comes. The syringing can be both morning and evening, and as we may take it for granted that this responsible work will be in capable hands we need not enlarge upon it,

CHAPTER XI

THINGS THAT MATTER

It is very essential that a rose grower, be he employer or employee, should know a great deal more about the rose than the details and routine of its cultivation as set forth in the preceding pages; and, be it said to their lasting honour, we have never met one who did not. We doubt if any intelligent worker could pass year after year in its culture without absorbing from it many of its peculiarities and much intimate knowledge that cannot be expressed on paper. This book, strictly concerning itself with the practical commercial side of rose growing, cannot enter fully into the history, character, and development of the rose, or expound the subtleties of its classifications, yet seeing that an intimate knowledge of these things cannot fail to prove helpful to the cultivator, it would be a flagrant dereliction of duty if we passed them by without notice. The least we can do is to insist upon their practical value and importance—to suggest that they can offer vast stores of pleasure and interest to the specialist—and to recommend their diligent study by delving deeply into that very generous literature which deals with every phase of this most fascinating subject.

We have sound, practical reasons for this recommendation, reasons of commercial value upon which we would lay a considerable emphasis. It is not only that "knowledge is power," but to be known as a specialist, as a master who knows his subject through and through, who can talk with intelligence and authority, engenders a respect and a confidence which makes for "trade," and is a magnet likely to attract the most desirable class of clients. This we have ourselves proved and have seen it proved by many others. It may at first sight appear to be a very long shot to suggest that a knowledge of the rose, as it was before England was a nation, had any bearing upon the selling of roses in this twentieth century; that a familiarity with the Tudor rose, only to be seen in mediæval ecclesiastic architecture, was a qualification for recommending the latest creations of to-day; that to be able to trace the hoary Rosa Centifolia through the dark ages to its later home in Provence

and connect it up with our finest new hybrids would all tend to establish a reputation and attract buyers to the nurseries; yet so it is, and it would be more difficult to find a commercially successful rose grower without those qualifications than to find a dozen possessing them.

Take the great and famous names, Paul and Turner, the two first which occur to us, and settle in your own mind whether they

FIG. 25.—Blush Rambler

would ever have attained to their great eminence in the commercial world of roses without their knowledge of the rose and all that pertains to it. What they did not know about the rose was not worth knowing, and this it was, allied to business perspicacity, that built up their successful businesses. We cannot all be Pauls, or Turners, or Cants, but we can all see very plainly the methods by which they achieved success, and as there are no other roads we shall do well to at least try to follow their lead.

As practical men, we very properly give pre-eminence to the

practical, but our intelligence tells us that the " practical " is not, in itself, everything—that there are other phases of knowledge which supplement it, which are capable of throwing light upon our ordinary practical methods, and are as " lamps unto our feet." The really progressive man, clear of vision and broad in mind, does not despise theoretic or academic knowledge—he even values the rose-lore of the enthusiast—for he sees it contains within itself much that is helpful and a very great deal that is inspiring. So, being a wise man, he gathers in all the general and specialised knowledge that comes within his reach, treasures it all up in the recesses of his mind, and rarely finds that he has laid by anything which at some time or other does not prove useful.

What we have written so far in this chapter we felt constrained to write, for we are all in favour of the widest and fullest knowledge of our subject; for the simplest and the most erudite, the most obvious and the most obscure facts have their values, and go to swell what we call " knowledge."

Practical Matters

Hitherto we have gone but little beyond the usual routine of cultivation and have scarcely touched upon those more subtle but powerful factors which make so much for success. With the information already given, any intelligent worker can successfully grow roses on a commercial scale, but the man of greater ambition, who wishes to excel, would not stop short at the various rules laid down. To such a man rose growing in its most practical form is not that soulless undertaking which can be summed up in the phrase " produce and sell "; he works for a greater ideal, and while to the casual observer he may sometimes seemingly subordinate the strictly commercial to intellectual considerations, it is " seeming " only and not " actual," for in the end he would have builded better than onlookers expected and commercial success would come to him as the direct result of his high aims. Do you appreciate that ?

Among other things he would study for himself the best conditions under which his roses would flourish, conditions of soil, of position, of manures; he would learn the essential differences

between the hybrid perpetuals, teas, hybrid teas, Wichuraianas, pernettianas, etc.; he would find out which was the best stock for any given variety; what made a good head as a standard, and what did not. He would satisfy himself as to the special and peculiar treatment appreciated by different varieties, many of which solicit individual treatment. He would understand diseases and what promoted them, and would take steps to forestall them; keep down the pests almost before they appeared; maintain the general good health of his stock, and this not only by his close personal observation and the careful keeping of records, but also by the observations and records of others, duly found in the literature of the rose; for we fear if he depended entirely upon his own observations, which are the most valuable of all, we should have to judge of his knowledge by the whiteness of his hair. But he knows that almost everywhere there are enthusiastic and devoted rosarians experimenting, searching, testing, recording as much, or more, for other people's benefit as their own. Their only care is to serve the interest and enhance the well-being and beauty of the goddess they so diligently follow. The cumulative results are ungrudgingly placed before us for our absorption and digestion, and seeing that we have only to read we should be churlish and unintelligent indeed if we failed to avail ourselves of so much that is valuable.

Soils

To the work of these good men we are anxious to add our quota, though we cannot hope to add anything new to what is already current knowledge. In so far as the soil is a fair subject for discussion, we can say that we have grown roses on the limestone and clay of the Cotswolds, on the heavy red loam of Devonshire, the alluvial deposits of the Thames Valley, the sandy loam of Surrey, the light, brashy, and the crude clays of the Eastern Counties, the bleak, peaty moorland of Lancashire as well as on its sandy sea front; and this, surely, is of sufficient range and variety to entitle us to speak with a certain authority. The fact is, that differing widely as these do in character and in climate, we are bound to say that we have been able to grow roses just as successfully in one as in another, though not perhaps so easily; and this forces

us to the conclusion that successful rose growing does not altogether depend upon the soil, but upon something that rises superior to it. We are not inconsistent when we go on to admit that we found some soils better suited than others, for it must be apparent to every practical man that we found growing more difficult on the peat and sand of Lancashire than on the fat, sheltered, alluvial soil of the Thames Valley; but our point is that difficulties can be overcome if the will is to grow roses.

The general testimony as to the superior qualities of a good, heavy loam is, of course, beyond dispute, for the rose does undoubtedly like a heavy, stiff soil; and if we can manage for it to get its feet down into the cool clay during the hot summer weather, it will give us of its best. Yet, strange to say, on soil in the Eastern Counties, where at the depth of a single spit we exposed the bed of gravel, we have grown some of the best hybrid teas, which though they certainly did lack a mere trifle in size and substance, were in every other respect admirable, making up in quantity and colour what they may have been a trifle deficient of in other respects. As to Wichuraianas on the same soil, the growth was surprisingly rampant, and the great masses of flower were as brilliantly coloured as those growing in the Birkdale sand, where colour is most marked.

What, then, is our conclusion? It is that no grower "with roses in his heart" need be deterred from growing them because his soil is not ideal, unless it is very obviously unfitted. What his soil lacks that roses want he can generally add, for there are always ways and means of modifying as well as of enriching soil. It is far more difficult to rid the soil of deterrents—an undertaking not to be attempted except by those who can afford to wait through a series of years. Soil that is so badly drained as to become almost a bog might by chance prove to be an excellent soil when drained but no one would deliberately choose such soil if any other was available. Soil too full of iron can only be made suitable after years of cultivation and cropping, so as to use up the objectionable surplus of iron, and this again no rosarian would be likely to choose. But given a good average quality, commercial rose growing may be undertaken whether the soil be clay, loam, brash, or peat, for the clay can be modified and the peat reinforced and supplemented.

Feeding

Roses when established, whether in the open ground or in pots, are gross feeders, but they are not omnivorous. They have their likes and their dislikes, added to which the nature of the soil in which they are growing has a considerable bearing upon the character of the food to be administered. Roses planted in heavy soils do not call for heavy, cool manures like those from the byre and pigsty, while those planted in light, shallow, and dry soils call for something cooler and heavier than ordinary stable manure.

We look upon the presence of these natural organic manures in the soil as equivalent to the " staff of life " and upon all others as perhaps necessary supplements. The condition in which these bulky manures are applied is of some consequence, as also is the manner of their application. Nothing except a bad attack of mildew is to be gained by digging in with a spade solid masses of less than half-decayed strawy manure, for it is essential to successful cultivation that this should be well rotted, easily disintegrated and evenly incorporated with the soil. Only as a mulch should it be partly rotted, and we are great believers in using it in that condition for mulching in the later part of spring when the juices can be washed into the roots and new supplies of food made available when most needed without disturbing the soil.

We must repeat the words " when established." Nothing can benefit by manure until there are roots—new roots—to take hold of it, while, *per contra*, positive injury may easily accrue as the result of applying it to non-established or unhealthy plants.

It might be naturally retorted, " You recommend planting in well-manured soil." So we do, and that is why we insist upon using only thoroughly rotted manures which can be so completely incorporated with the native soil that its presence has no deleterious *mechanical* effects. There must be no bulk, but a complete dissemination, and with very little care in planting it can be so done that little if any manure be brought into close contact with the roots, being so distributed as to remain sufficiently near to be seized upon and absorbed by the earliest emission of new roots.

An approved way of maintaining the supply of phosphates is by working in a good dressing of crushed bones, and even if some

of this has direct contact with the roots no harm can possibly result, because it is so slow acting that it will only yield up its salts when the new roots actually fasten upon it and extract for themselves what they need. This is a simple if not scientific way of putting it. The manures incorporated with the soil yield up their active principles, gradually exhausting them, and it is but common-sense practice to replace them by the use of fertilisers naturally or chemically produced. Of the former, Peruvian guano, fowl manures, sewage manure, and some others are included, the former being without doubt the most complete fertiliser. They all ought to be used with caution. Besides these there are scores of proprietory preparations on the market, very few of which can be accepted as special rose manures, and this we can say without imputation on their fertilising value. But as a matter of fact we want to advise care and discrimination in the selection of fertilisers, for it is worse than useless to fill your soil with ingredients it does not need. One ought to find out what is wanted and supply that and nothing more. Too much even of a good thing will sour the soil and propagate disease. We mentioned that old fungoid disease known as the Red Rust, and we have always held the opinion that it was brought about by the frequent use of crude sewage from the night carts, and it is admitted that an injudicious use of any manure or fertiliser encourages the more modern Black Spot disease. Mark you, we are in no way decrying fertilisers, but are only anxious to drive home our conviction that they must be discriminately selected and used with great care.

Roses in pots are benefited most by administering the food in a liquid form. We prefer cow and sheep manure to any other, though we alternate these with others of chemical manufacture. To prepare the former we fill a canvas bag with pure droppings and leave this to soak in a barrel of water, occasionally squeezing it. We do not believe in strong doses and use the liquid when it has the colour of weak coffee. Occasionally we give soot water ; at other times dissolved superphosphate, giving at first a weekly application until the plants are well showing their bloom, at which stage we revert to giving it twice a week. If we vary the diet, as we sometimes do, we use a dry manure, a rose manure of some repute, never exceeding one teaspoonful per plant at any application. We

rely upon the heavy interim waterings and the perfectness of the drainage to carry away any impurities that can foul or sour the soil. Let the general practice be "little and often," for to overload the soil in a pot with rich food would react upon the plant just as the overloading of a child's stomach with rich and heavy foods would upset its entire digestive and alimentary system, poisoning the blood and bringing disease.

Mildew

We will now revert to the practical. A very special study of the model rose grower must be that of the diseases which attack the rose, the most familiar and the most virulent of which is mildew. It worries us, it baffles us, is altogether inexplicable to us. Gallons of ink have been trailed out concerning it; years have been spent in research as to its cause, many withers have been wrung over it, and all to little purpose, for we have made but little progress toward stamping it out. So far as we know, no one is in a position to dogmatise about it, and we feel very little inclination to take up space by discussing abstract theories, but we can and do offer a few observations of our own while recommending every grower to follow as closely as possible the results of investigation as described by eminent scientists.

There may be, there probably are, a dozen predisposing causes for mildew, yet it must at once be conceded that some varieties—in other respects quite vigorous and hardy—are more susceptible and suffer from it more than others. That magnificent and glorious variety, Crimson Rambler, is going out of existence because its constitution has been ruined by this disease. When the writer stood in wonder before the first plants of this in the Slough nurseries, and knew not how to adequately express his admiration, he little thought that this particular scourge should by and by exterminate it even as the white scourge destroys so many of the fairest and the best of our own race. But so it is; and this fact points strongly toward varietal weakness, a weakness confirmed by a score of equally susceptible varieties, among which must unfortunately be included that ever popular Killarney in both its forms. We have heard a great deal recently about the need for raising varieties

immune to this disease, and, judging by experiments with other things, we believe much may be achieved in that direction ; but that pertains to the future, and dealing as we are bound to deal with existing conditions, there are exceedingly few varieties, if any, which remain immune if subjected to conditions favourable to this fungus.

Sometimes the kind of stock upon which a rose is worked may be a predisposing factor, and we venture to say this, for many years ago we banished the *de la Grifferia* stock from our nurseries because the roses growing on it were badly affected with the mildew while the same varieties on other stocks growing side by side with them were not so affected. This is an avenue which has been and is still being explored, and, so far as our own observations go, the Rosa laxa stock would appear to give the most satisfactory results. We must watch this and regulate our procedure by the findings of science.

Now to bring the matter down to practical politics. We submit, not without diffidence, yet not without the most careful consideration, that the best way open to us at present is to fight the mildew along hygienic lines—call it soil-hygiene if you will, for we are convinced in our own minds that bad soil-conditions are responsible for a great deal of the mildew now so prevalent. With us this is no new gospel—we have been preaching it for years, and age and experience only make us more convinced and ardent in advocating it. We have great faith in the value of deep cultivation, a perfect tilth, a soil right in texture and well drained. We believe in the application of organic manure not turned in with the spade in solid masses, but worked in and thoroughly incorporated with the soil. Rose roots penetrating into a mass of manure will, when the manure runs dry, almost assuredly cause mildew, and dryness at the roots *from any other cause* will have the same effect. We have seen plants badly affected when their roots were in cold, undrained clay, but we have seen them far worse when grown in shallow, gravelly soil which held no reserve of moisture whatsoever. Both extremes are bad, and we shall the more carefully avoid them as we appreciate the fact that we can best combat the mildew by taking more care of the roots and securing for them such perfect hygienic conditions that they can grow and function healthily.

Mildew is not the only disease. We used to suffer from Red Rust in the days when the manetti was the leading, if not the only, stock, and this, though not so prevalent, is still with us. There is, however, a danger of another disease, the Black Spot, becoming more common, and this has been more apparent since the Pernettiana roses have been introduced. Our methods of dealing with both these diseases are simple and, we consider, successful: We just gather and burn affected foliage and subject the plants to a spraying in the late winter with a copper solution.

CHAPTER XII

MARKETING

THE marketing of cut roses must follow approved lines ; it is not wise to attempt to run counter to accepted market standards, and this not because of any stupid conservatism on the part of the salesmen, but primarily for the convenience of buyers. Packed *à la mode* the buyer can see at a glance and without handling what a package contains. He has no time for the minute inspection of his purchases—indeed, the best buyers, knowing exactly what they want even before they leave their homes, pass through the market like flashes, and are gone again before the crowd of ordinary buyers have left their beds ; and when they have passed the cream of the market has been skimmed off.

Cut roses must be graded. The best blooms should be less than half opened, possess long stalks, well furnished with foliage, and be packed singly in rows of a dozen. Seconds should be similar stuff, perhaps a little more expanded or slightly inferior in quality or size, also cut long, with foliage, and bunched in half dozens. Smaller stuff still, with shorter stalks, are usually bunched in dozens or in sixes, according to sample.

Before being packed, the roses should be stood in water, if only for an hour, but longer if possible, so that they may be fairly charged with moisture, for there are but few things that more quickly show the lack of it. Line the box well with white paper, allowing sufficient to overlap for the top covering. Lay a roll of paper cross-ways near the head of the box upon which to lay the neck of each bloom, that its head may be so raised that no pressure is put on the under petals. This preserves the exquisite shape of the flower. Three, or at the most four, rows will half fill the box, when the packer must reverse it and start at the other end, exactly repeating the process, taking care to so dispose the stalks that they shall not damage the petals of those already packed. A stick fitting tightly across the centre and pressing upon the stalks will hold the whole lot in position and it will be found at the other end of the journey

that they arrive exactly as they were packed. Before covering, slightly bedew the blooms with a very fine spray, then see that a lipped and non-slipping lid is securely fastened.

This is the mere outline of packing. What the packer has to keep before him is that the value of the package depends upon the freshness, the evenness, the flawlessness of every flower in it, for so lynx-eyed are the buyers (they have made buying an art) that they can immediately spot a defective or faulty bloom, and are adepts at valuing the whole package by it. A high-class florist needs none but high-class stuff, and if by any chance he gets hold of a package from which he has to discard valueless blooms he is very chary of purchasing further from the same mark.

Some discrimination must be made in the selection of the salesman. It is quite possible that the commission agent who so satisfactorily disposes of our peaches and our grapes may just as satisfactorily handle our roses, but that does not necessarily follow, the probability being rather the reverse. It is a point to be watched and followed up, for there are hot-house fruit specialists and there are cut flower specialists, just as there are hardy fruit specialists and greenhouse plant specialists. It does not take a keen business man long to satisfy himself on this point, but unfortunately we cannot all claim to be keen business men, though we try to be. Sometimes it pays to split a consignment, though perhaps not often ; for a salesman may find himself overloaded, in which case the tendency is to clear at reduced prices ; but because a particular salesman is overloaded it does not necessarily follow that the market is glutted. When one has a salesman who is eminently satisfactory, it is sound policy to consider him and to keep him supplied up to his capacity for selling, but that is no reason why he should be glutted if there is an alternative and satisfactory man who will handle the surplus.

It may be suggested that this splitting up of a consignment might be left to the salesman, who finding himself glutted would probably be able to pass a part over to a confrère ; but the natural tendency would be for him to hang on as long as possible in the hope of clearing. However much respect we may have for our salesman (and that is considerable) we think this is a responsibility which ought to rest on the grower and not on his agent. Beside, salesmen

FIG. 26.—A Good Market Rose
Madame Abel Chatenay

are reasonable business men and they do not put forward any claim to a monopoly in the produce of a sender.

Remember that the marketing of any kind of produce is a feature of our business that demands close attention and study, for oftentimes it is absolutely vital. Many a skilled cultivator grows splendid stuff, yet fails in the marketing—thus all his success is nullified. It is not enough to grow well and pack well and then leave the issue to the salesman. Our consignments are *ours* until they have actually changed hands, and if they are not sold to advantage the loss is ours. Surely this imposes upon us the need of exercising full responsibility and of keen watchfulness.

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